

EMUNCTOLOGY

The Principles and Foundations of the Emunctory System

Emunctology

Principles and Foundations
of the
Emunctory System

And its Relationship with All Organs of the Body



The circle with the Cross
These make for the sign that all thou hast heard is fulfilled in Him

Hospitallers Order of the Good News

The Lord He Is God

Trust in Him who Is the Way

Keep thy faith in Him, that All will be and is right!

And make thy life, thy activities in accord with same!

Book Title : Emunctology Principles & Foundations
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Without Him to lead, and the Team to help, this and all other Books, that have been published by the Order, could have not been written, in a speedy way, that they have been. For the task at hand, is enormous, and the days and nights, I have denied myself, this in and for the benefit of others. For the help, of he who is in need of it. And also that man may know that He, indeed, is mindful of each one of you. Seek Him, and Glorify Him, for He Is Thy God and Saviour.

Information & Contact:
ssanctuary@gmail.com
www.borderedcross.org

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Book Nº

In Gratitude To

This Book is dedicated to the following:

To the God of Abraham: Who Is The God of Humankind, Our One and Only Lord and Saviour The Christ.

We Dedicate this Book to: to all those who have perished at the hands of ignorant men; To all those Wise Men who understood the difference between what is right and what is wrong; To those wise ones, who are ever present and let not fall civilization.

Acknowledgement of Assistance

We hereby acknowledge, the important assistance which Professor Ingrid Betancourt, Ph. Ed. made towards the research and publication of this Book, which became possible.

"The Lord He Is God"

Has in the Oneness of the Living God the Christ Our Lord and Saviours, so it is in the oneness of comprehension and understanding in which those points of truth these authors all conclude and agree upon.

And as a result this book is produced and given as a testimony that:

"The Lord He Is God", and the Lord walks with us everyday, even if you do not see Him, He is with us, He is with those who ask for Him for the Lord Is God of Humankind.

These are not vain words, but are those words from those who know The Lord, His Ways, His Coming. And many others whose names do not appear here but they know who they are. To all physicians, whose convictions regarding the soundness of principles set forth in this work, and whose fearless advocacy of therapy based on these principles have been a constant source of encouragement and inspiration to many, this book is also dedicated.

"Know Who is the author, then, of thy wisdom. Who is the keeper of thy hopes? In Whom have ye believed? If these are to be used for self-aggrandizement, self-indulgences, do they not become rather as He gave of old?

"Ye shall come and say, Did we not in thy name heal the sick? did we not in thy name cast out demons?" and He will say: "Depart from me, I never knew you!"

Why? Because the desire, the purpose is that self may be exalted, rather than the humbleness of the heart before Him. For he that would be the greatest must be the servant of all. First must the body find itself and make its relations correct with the Creator, and first must he learn that the beginning of wisdom is the understanding and knowledge of the Father."

Acknowledgements

The collective knowledge generated from academic research summarized in various references has been critical in the creation of this published work, which is best viewed as a comprehensive compilation and collection of published information by many authors throughout the ages, as well as personal and clinical experience in the treatment of self and others.

This work was possible only by the guidance and Light of Christ who Is God.

A special thanks also to those who work with Him and help all of us.

May each individual be able, to find this eternal truth, while on earth.

Credits and References

Although all credits and references where given to the best of our knowledge and information contained in the central archives of the Hospitallers Order of the Good News.

If there is any errors or mistakes we kindly ask the reader to allow the knowledge of such items in order to rectify same in future editions of the present Book.

Health and Therapeutic Journals and Books

The present work rests upon the foundations of those civilization luminaries, men and woman of exceptional talent, intuition, and detailed observation. Furthermore it was a privilege to us, for them to have the dedication and time to write and publish their clinical findings.

There is then a vast amount of Journals and Books devoted to the Health and Therapeutics.

Of these printed records those from 1850 to 1950 in this one hundred year period we specially encounter that the majority of what is to be known concerning disease its origin and its treatment and cure, where in fact correctly identified.

These records, in their collective, contain timeless observations of which many remain permanent truths.

These pearls are hidden from plain sight, only the adept or the initiated can identify them and pick one by one, from the surrounding confusion.

Sources

This book is a Record of the clinical findings of many great Health Practitioners, their findings remain the same throughout the centuries. All share the same conclusion. The Truth is in plain site.

Apart from the Archives of the Hospitallers Order of the Good News Library, we are also very grateful to all libraries, who have kept books for the last 200 years, those of which by their keeping allowed the information on those books to survive, and be upon their withdrawn from their keeping available to purchase by the Order, and kept in its Archives and Library.

The Hospitallers Order of the Good News, has therefore obtained many of this rare Books, many of which are not available, nor found in libraries, **for this we thank The Lord who Is God, for having placed the same in keeping of the Order.**

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Much care was taken to avoid any errors or omissions, if any do exist, please let us know, in order to correct same in any future editions.

> ***"I will instruct thee and teach thee in the way which thou shalt go: I will guide thee with mine eye."*** *- Psalm 32:8*

Dedication

Pioneers, Innovators and Contributors to Humankind Knowledge and Understanding
of the
Science & Technique, to Maintain and to Obtain Health

Many where those who made strides in the promotion and advancement of the Science of Healing, among them the following individuals where examples and shining stars on the field of Health:

The Forces of Creation, The Christ who Is the Lord God of all Humankind, Hippocrates of Cos (460BC-370BC), Claudios Galen (c.130AD-c.210AD), Paracelsus (1493-1541), Nicholas Culpeper (1616-1654), Robert William Boyle FRS (1627–1691), Nathaniel Henshaw (1628–1673), Sir John Floyer (1649-1734), Dr Robert Pitt, MD (1653–1713), Dr Friedrich Hoffmann, MD (1660–1742), George Cheyne, MD, FRS (1673-1743), Dr Johann Siegmund Hahn, MD (1696-1773), Rev. John Wesley (1703-1791), Dr Albrecht von Haller, MD (1708-1777), Dr Franz Mesmer (1734-1815), Dr William Wright, MD (1735–1819), Sir Benjamin Thompson, FRS (1753-1814), Dr Johann Kampf, MD (1753-18_), Dr Samuel Hahnemann, MD (1755-1843), Dr James Currie, MD, FRS (1756-1805), Dr Christoph Wilhelm Hufeland, MD (1762-1836), Dr John Abernethy, MD (1764–1831), Samuel Thomson (1769–1843), Dr James Morison, MD (1770-1840), Dr James Scott, Surgeon (1770-1848), Dr François-Joseph-Victor Broussais, MD (1772-1838), Pehr Henrik Ling (1776–1839), Sir John Forbes, MD (1787-1861), Dr George Hume Weatherhead, MD (1790-1853), Rev. Sylvester Graham (1794–1851), Dr Wooster Beach, MD (1794–1859), Dr John Bell, MD (1796-1872), Dr Josef Weiss, MD (1797-1847), Richard Tappin Claridge (1797-1857), Dr Albert Isaiah Coffin, MD (1798–1866, Dr Edward Johnson, MD (1801-1867), Dr Samuel Dickson, MD (1802-1869), Dr Jonathan Pereira, FRS (1804-1853), Henry Friedrich Francke (1805-1848), Dr James Wilson (18_-19_), Dr H Douglas Wilson (18_-19_), Dr Horatio Prater, MD (1806-1885), MD (1807- 1867), Dr James Manby Gully, MD (1808-1883), Dr. Julius Lobethal, DM (1810-1874), Dr John Balbirnie, AM, MD (1810-1895), Dr James Caleb Jackson, MD (1811–1895), Dr Russell Thacker Trall, MD (1812-1877), Dr Alfred Charles Garratt, MD (1813–1891), Dr Frederick Hollick, MD (1818-1900), Dr Rudolf Ludwig Carl Virchow, MD (1821–1902), Mary Baker Eddy (1821–1910), Dr Louis Joseph Désiré Fleury, MD (1815-1872), Dr Joel Shew, MD (1816–1855), Dr Prof Pierre Jacques Antoine Bechamp, MD (1816–1908), Dr Ignaz Semmelweis (1818-1865), Adriel Sylvanua Kingsley (1818-1898), Richard Metcalfe, Hydropath (18_-), Dr Christian Charles Schieferdecker, MD (18_-), Dr William Macleod, FRCP (18_-19_), Florence Nightingale, OM (1820–1910), Mons. Sebastian Kneipp (1821–1897), Dr Franz von Leydig, MD (1821-1908), Dr Edward Wickstead Lane, MA, MD (1823–1889), Joseph Constantine (1823-), Dr William Snowdon Hedley, MD (18_-), Dr Georges Octave Dujardin-Beaumetz, MD (1833-1895), Dr Andrew Taylor Still, MD, DO (1828–1917), Dr Hermann Senator, MD (1834–1911), Dr Joseph-Marie-Alfred Beni-

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Those who came before me did the work.

All which was done was to comprehend that which was written, with the help and guided by Him Who Is The Prince of Peace, and Saviour.

To These and many Others; Humankind Owes the Deepest and Eternal Gratitude, for the Service and Light They brought to this plane: Planet Earth.

There has been given, and promised; in the actions of those that would give Truth; that Truth would Rise and Prevail, and that, that as is Truth will ever brighten, broaden, build and manifest the glories of the Source from which such Truth Emanates.

> ***"For flesh and blood hath not revealed it unto thee, but my Father which is in heaven."*** *- Matthew 16:17*

> ***"The day science begins to study non-physical phenomena, it will make more progress in one decade than in all the previous centuries of its existence."*** *- Nikola Tesla*

> ***"If therefore, anyone wishes to search out the truth of things in serious earnest, he ought not to select one special science; for all the sciences are conjoined with each other and interdependent;*** *he ought rather to think how to increase the natural right of reason, not for the purpose of resolving this or that difficulty of scholastic type, but in order that his understanding may enlighten his will to its proper choice in all the contingencies of life.* ***In a short time he will see with amazement that he has made much more progress than those who are eager about particular ends, and that he has not only obtained all that they desire, but even higher results than fall within his expectation."*** *- Descartes*

> ***"History teaches us that the views of modern times constantly revert to those points which were regarded by earlier observers as settled, and thus, particularly nowadays, when so few have leisure for the historical study of science, there is perhaps ample justification for bringing old notions within the intellectual view of a succeeding generation."*** *- Dr Rudolf Virchow, MD, in "Gesammelte Abhandlungen zur Wissenschaftlichen Medicin", 1856.*

> *"As a Scientist of 50 years of Study and Research,* ***I come to the conclusion that the things which we have said are impossible today become possible tomorrow; the things we considered improbable today become possible tomorrow; things we considered improbable today by the professional men may be found to be curable by some other method tomorrow."*** *- Sir Oliver Lodge*

Without Him to lead, and the Team to help, this and all other Books, that have been published by the Order, could have not been written, in a speedy way, that they have been.

For the task at hand, is enormous, and the days and nights, I have denied myself, this in and for the benefit of others.

For the help, of he who is in need of it.

And also that man may know that He, indeed, is mindful of each one of you.

Seek Him, and Glorify Him, for He Is Thy God and Saviour.

"The reader will observe that throughout the volume: The editor has availed himself, in his notes, of quotations from the works of many talented men, both ancient and modern, in support of his assertions; men of sterling abilities, who, for the most part are now beyond the reach of flattery, but who, when living, were among the brightest ornaments of human excellence; with the cheering hope that this exertions, here given, in the cause of Health and Weal (in a healthy prosperous state), supported and sanctioned as, they have hitherto been, will again insure as favourable a reception to this edition, of which was to be attributed much to the simplicity of its style and composition; its object being:

"To Hold the Golden Mean,
To Keep the End in View,
To Follow Nature." *- Lucan, Book II, Verse 381*

- Dr Edward Jukes, Surgeon, in "On Indigestion and Costiveness, and the use of Lavaments", 1833.

Disclaimer

"The content of this Book is based on research conducted by the Members of the Hospitallers Order of the Good News, unless otherwise noted. The information is presented for educational purposes only and is not intended to diagnose or prescribe for any so-called "medical" or "psychological" "condition", nor to prevent, treat, mitigate or cure such "conditions". The information contained herein is not intended to replace a one-on-one relationship with a qualified healthcare professional. This information is not intended as "medical" advice, but rather a sharing of knowledge and information, ***based on research and experience.*** *The Hospitallers Order of the Good News encourages the reader to make your own Health Care decisions based on your judgment and research in partnership with a qualified Health Care Professional. These statements have not been evaluated by the Food and Drug Administration, in the USA. The information on this Book is not intended to diagnose, treat, cure, or prevent any disease."*

As sad it may be, that one is forced to place such a disclaimer, just serves to illustrate the state where the present civilization is at the moment.

A civilization founded on lies has no future, a civilization based on false or fake pretences has no future, a civilization that follows political correctness is fake by proxy.

To sustain the present civilization is to sustain a lie.

Thus the solution is to establish a New Civilization, this if Humankind will ever have a chance to develop on Earth.

The study of the Emunctory System doesn't attract major research efforts, and it is all but abandoned to a profound neglect, by the Medical Trade.

The purpose of this book, is to create in one single volume, a collection of written experiences from physiologists, clinicians, physicians, surgeons, and radiologists who have spent most of their lives studying subjects that relate to the Emunctory System.

Every text in this book was chosen for a reason, every idea and teaching that it conveys, has been found to be in truth, not in error, but in truth, and many times this individuals where at odd with the Medical Trade, matters not what other say, our trust is in Christ, for He Is God.

"In relation to disease, and the true principles and the means of cure, the most universal and lamentable ignorance prevails among mankind." *- Sylvester Graham, in "Lectures on the Science of Human Life", Vol. 2, 1839.*

To Those Who Are Willing to Learn From a New Point of View.

In that, the End of Times, and the Beginning of a New Era, 2022.

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EMUNCTOLOGY

The Principles and Foundations of the Emunctory System

And its Relationship with All Organs of the Body

Constituting
A Body of Health knowledge
on
The Emunctory System

"History Teaches us that: The views of modern times constantly revert to those points which were regarded by earlier observers as settled, and thus, particularly nowadays, when so few have leisure for the historical study of science, there is perhaps ample justification for bringing old notions within the intellectual view of a succeeding generation." - Prof. Dr Rudolf Virobow, MD in Preface to his "Collected Treatises on Scientific Medicine", Gesammelte Abhandlungen zur Wissenschaftlichen Medicin, 1856.

"Where a truth is made out by one demonstration, there needs no further inquiry; but in all probabilities where there wants demonstration to establish the truth beyond doubt, then it is not enough to trace one argument to its source and observe its strength and weakness, but all the arguments, after having been so examined on both sides, must be laid in the balance, one against another; and upon the whole the understanding determines its assent." - John Locke in "The Conduct of the Understanding in the Search of Truth", 1825.

"A Thesis submitted to the Hospitallers Order of the Good News, in partial fulfilment of the requirements for the degree of Doctor of Health in Emunctology.

It was used, that which was most expressive in fewest words, and to present that which was found to be relevant to the subject matter.

> ***"For my part I deem those blessed to whom, by favour of the gods, it has been granted either to do what is worth writing of, or to write what is worth reading."*** *- Pliny the Younger, in letter to historian Tacitus.*

For the knowledge which is here by given, is but the Light of the Lord.
These are not vain words, nor vain conceptions.
For He spoke not in vain, neither did those words mean something only to those twelve to whom He spoke at the mount:

> ***"Whatsoever ye shall ask in my name, believing; ye shall have in the body.***
> ***What ye shall bind on earth shall be bound in the heaven.***
> ***What ye shall loose on earth shall be loosed in heaven."***

May this work enlighten the many Practitioners of Health, (not of medicine and death), rather of Health and Life, those who really have the Desire, the Intention, the Aim to Help, to Be of Help, of Service. And as a consequence, of its gained wisdom, and understanding, bring Health and Happiness from life, and that they, may pass it on, to others".

Rui Alexandre Gabirro, KHTP, OM, CA
Hydropath Practitioner, Trained in Osteopathic Manipulation
and Chiropractic Adjustment, Proponent of Emunctology

Volksmed School of Health & Pharmacology

May 2021

> ***"You never change things by fighting the existing reality.***
> ***To change something, build a new model that makes the existing model obsolete."*** *- Richard Buckminster Fuller*

To Relieve Suffering is the Privilege of every Emunctologist.
To Teach How to Anticipate Disease, and Prevent its Occurrence is His Duty.

Chapter 1

Emunctology

Know your body, and know your self, if you want to be master over your health.

"What is rational is real; And what is real is rational. Upon this conviction stand not philosophy only but even every unsophisticated consciousness. From it also proceeds the view now under contemplation that the spiritual universe is the natural." *- Georg Wilhelm Friedrich Hegel, in "Philosophy of Right", 1821.*

"Life consists of waste and supply, action and extinction; living substance assuming the state of death, and dead materials, by the laws of vitality, the condition of life." *- Dr John Goodman, MD in "An Incontrovertible Argument in Favour of the Hydropathic System", 1878.*

"Various Theories and Explanations which are commonly adduced have been omitted, so that the student may approach the subject with an open mind, but with the assurance that all the movements described have been thoroughly tried and found useful. He will thus be in the advantageous position that he starts with no preconceived theories, and his mind will be unbiassed. In this manner we may ultimately arrive at the Truth." *- Dr Thomas Marlin, MD, MB, DPH, RCPS, DMRE, in "Manipulative Treatment", 1934.*

What Is to The Physical Being, The Most Precious Thing it Possess?

"**Health is the most important single thing, that a human being can possess.**

Known this to be a truth. It is the intention of the Creator who Is God, The Christ, or Christ Conscious that He Is, that all may have an opportunity for advancement, and that none may perish.

Yes! The Lord Who Is God, is mindful of His Creation, is mindful of You.

In the presentation of this work, I freely join my intention, One with Him, in bringing this Information, in the form of much, of what has been recorded, and which is correct in thought, and expression, in principle, derived and based from clinical observation.

The aim is to Teach, those who wish to become aware of the workings of the body, and to gain the understanding of how the body works, and the functions of same.

If one knows how the body works and functions, then you will be able to identify what is wrong with the body and to understand, comprehend what are the Therapeutic Methods which need to be applied to the body, in the correct and beneficial manner, in which to allow the body to recover its natural working, and functioning order.

This book teaches the seeker of Him, the Principles and the Foundations of that knowledge." - Rui Alexandre Gabirro

The Co-Working of The Divine and The Human

"In the ministry of healing, the physician is to be a co-worker with Christ.

The Saviour, ministered to both the soul, and the body.

The gospel which He taught was a message of spiritual life and of physical restoration.

Deliverance from sin and the healing of disease were linked together.

He is to unite with Christ in relieving both the physical and spiritual needs of his fellow men.

He is to be to the sick a messenger, bringing to them a remedy for the diseased body and for the sin-sick soul.

Christ is the Chief Physician, He is at the side of every God-fearing practitioner, who works to relieve human suffering.

While the physician uses nature's remedies for physical disease, he should point his patients to Him Who Can Relieve All The Maladies of Both the Soul and the Body.

That which physicians can only aid in doing, Christ accomplishes.

They endeavour to assist nature's work of healing; Christ Himself is the Healer.

The physician seeks to preserve life; Christ imparts life.

People need to be taught that drugs, do not cure disease.

It is true that they sometimes afford present relief, and the patient appears to recover as the result of their use; this is because nature has sufficient vital force to expel the poison and to correct the conditions that caused the disease.

Health is recovered in spite of the drug.

Often the effect of the poison seems to be overcome for a time, but the results remain in the system and work great harm at some later period. By the use of poisonous drugs, many bring upon themselves lifelong illness, and many lives are lost, that might be saved by the use of natural methods of healing.

The poisons contained in many so-called remedies create habits and appetites that mean ruin to both soul and body.

Many of the popular nostrums called patent medicines, and even some of the drugs dispensed by physicians, act a part in laying the foundation of the opium habit, the morphine habit, that are so terrible a curse to society.

The only hope of better things, is in the education of the people in right principles.

Let physicians teach the people that restorative power is not in drugs, but in nature.

Disease is an effort of nature to free the system from conditions that result from a violation of the laws of health.

In case of sickness, the cause should be ascertained. Unhealthy conditions should be changed, wrong habits corrected.

Then nature is to be assisted in her effort to expel impurities and to re-establish right conditions in the system.

Too little attention is generally given to the preservation of health.

It is far better to prevent disease than to know how to treat it when contracted.

It is the duty of every person, for his own sake, and for the sake of humanity, to inform himself in regard to the laws of life and conscientiously to obey them.

All need to become acquainted with that most wonderful of all organisms, the human body.

They should understand the functions of the various organs and the dependence of one upon another for the healthy action of all.

They should study the influence of the mind upon the body, and of the body upon the mind, and the laws by which they are governed." - Ellen G. White, in "The Ministry of Healing", 1905.

> ***"No knowledge can be more satisfactory to a man, than that of his own body, its parts, their functions and actions."*** *- Thomas Jefferson in "Letter to Dr Thomas Cooper", 7 October 1814.*

Emunctology

The Scientific Basis of Emunctology rests upon the work of many, and it is, where the work of many coincide and agree upon, that is where Emunctology is explained.

The Truth is distilled, and it is the result of the sum, of that in by which, and where all these coincide, thus agree in the point of their logical and educated observations, and correct conclusions.

Emunctology in concept, was written in accordance with His orientation, His guidance. Know that He Is Mindful of you.

He the Lord Who Is Thy God. He wishes no soul to perish.

And in His work, He makes that, which may be used for every soul to understand their purpose, and fulfil the purpose for which they have entered into materiality. The Books contained in the Old Testament, in the New Testament, the Anatomy of all life, and all Creation, are One.

For the Emunctologist must known, that the Body is indeed the Temple of God.

Then first analyse thyself, thy purposes.

Know that the body, the mind, the soul are one.

The body is the temple. Treat it as such, the temple of God.

Don't abuse it, don't misuse it, but in mind, and in spirit, as well as in physical outlook, keep it as a place worthy of thy Father-God, and thy Saviour, the Christ, meeting with thee in that body, that mind, that soul.

Emunctologist

Emunctologist are Hydropaths, who have been clinically trained in Neuropathy, applying well known Therapeutics.

Thus Emunctologists are also called Therapeutae or Doctors of Health.

The term Therapeutes means one who is attendant to God.

Title of Doctor

"The title "Doctor" is derived from the Latin docere, which means "to teach." Every doctor should spend half of his or her time teaching patients how to promote good health. Doctors need to take the responsibility for educating patients because knowledge is an essential part of the healing process."

Intention

It was my intention since young, not to write any book, as there seemed to be so many, and that all had been already written.

Another observation made was that after reading a book, I could only take 1 or 2 paragraphs of useful or practical learning from same, and often thought on the waste of paper to print a book, that seemed to have so little to offer.

I promised to myself, if I ever wrote a book, that the same would be as full of useful information as it possibly and practical could be placed, straight to the point and in a condensed, and precise manner.

Thus not wanting to write a book for the sake of generating more books, (in a world where so many books already existed).

I have compromised on my promise, and instead, have hand picked into one volume all those findings, from all those books, which in the study of same, and under careful observation, one knows to be right **(as the Light of Him shines, indicating the Path of Truth, remembering that God Is Truth, and all that comes from God is Truth).**

If one just would but Follow, the Light of Christ who Is God, will find not only the Light, but also Truth and Health.

"Be true to yourselves, to your fellow man has he is a creation of God thus by serving him you will be serving God, all will end well, and you will be a power for good to humanity, and worthy a name while you live." *- Dr Andrew P. Davis, MD, DO, DC in "Neuropathy illustrated" 1915*

"Time erases the comments of opinion, but it confirms the judgments of Nature." *- Cicero*

"We are constrained to believe that medical men are inclined to assume to be arrogant, self-assertive, and assume to know really more than they do, and having but one way to cover up their mistakes: that of "burying them", they don't want to shoulder the responsibility of a "new idea", a new process of healing, until others have tried it long enough for it to have become "popular", and then they will boldly assert that "I always knew it". - Dr Andrew P. Davis, MD, DO, DC in "Neurology Embracing Neuro-Ophthalmology, the New Science for the Successful Treatment of All Functional Human Ills", 1905

"A Student of Life, must take in each part of the body, and study its uses and relations to other parts and systems." *- Andrew Tailor Still, DO, in "The Philosophy and Mechanical Principles of Osteopathy" 1902.*

"Men whose limitations are perceptibly circumscribed mentally, and the marks of deficiency, intellectually, show in every line, on every page, in every sentence; so that distrust, rather than confidence, is created in the science" - Dr Andrew P. Davis, MD, DO, DC in "Osteopathy Illustrated" 1899.

"**Medicine is incompatible with the physical organism**, for it is an excess, therefore unnecessary, being composed of chemical elements not the same as are in the make up of the body, therefore acting as foreign substances. **It is a fact, indisputable, supported by abundant proof, that any excess or addition to the elementary chemical constituents of the body, produce inharmony of its structure.**

This inharmony is evidence of disease.

That condition is what the person afflicted desires to get rid of and avoid.

The intelligent physician knows that his medicines do not cure, but that, if any benefit is derived from their use, it must be from an increase of stimulus causing an increased effort on the part of the organism to eliminate he irritant thus added, and if the system has the strength to do so, the reaction is beneficial; in a word, **"Medicine Produces Another Disease"**, which takes the place of the former hence the name, Allopathy." - Dr Andrew P. Davis, MD, DO, DC, in "Neuropathy illustrated" 1915

The Example to Follow

Assiduous work, with perseverance.
A tireless worker.
An enthusiast.
This not because of desired for personal glorification, but be modest, and at all costs uphold what you know that to be correct.
Be an experimenter, proving assertions by simple, but uncontrovertible experiments, in which you must guard against every possible error.
In the fields of observation, chance only favours the mind which is prepared.
For True Science has no nationality, and is the knowledge and the patrimony of humanity, the torch which helps to brings light into the world.
Thus, the study of Truth; is that which enables, and makes for the progress of Humanity, by its labours of Correct Thought, and Intelligence ever mindful of its Creator.
And The Light as ever, given by Him.

> ***"Apply thine Heart unto Instruction, and thine Ears to the Words of Knowledge."*** *- Proverbs 23:12*

The Team main intention, has been to place before the Student of Emunctology facts which will aid them in their daily experiences in Clinical Practice.

To be used for a:

1. Continuous System of Teaching, and a;
2. Reference Manual

> ***"The normal secretions of every organ in the body have a modifying influence on toxin-poisoning.***
> ***When an organ fails to secrete, it becomes diseased through the influence of the toxin. Such an organ is said to be diseased; if the lungs, it is pneumonia; if the liver, hepatitis; if the kidneys, nephritis; etc."*** *- Dr John Tilden, MD*

Before Emunctology: For There Is Another Way

The Science of Emunctology Continues and Advances the Work of these former Institutions & Health Schools:

Hygieo-Therapeutic College

Operated by Dr Russel Thacker Trall, MD Founded in New York City (1853), and in New Jersey from 1869 to 1877. The College was a Hydropathic Institution, opposing drug-based medicine and advocating approach to Health by the use of Hydrotherapy.

Instruction at the College emphasized the Curative Powers of:

1. The Internal and External uses of Water.

2. A Simple Diet.

3. Proper Exercise.

4. Fresh Air.

The school placed little or no reliance upon Medical Trade Drugs of any kind.

Dr John Harvey Kellogg, MD was a student at this School. It was here that he first graduated as a Medical Doctor.

> ***"There is a muscle in the body that beats when I am asleep. It beats when my will is inactive and I am utterly unconscious. It keeps on beating all the time. What will is it that causes this heart to beat? The heart can not beat once without a command. To me it is a most wonderful thing that a man's heart goes on beating. It does not beat by means of my will; for I can not stop the heart's beating, or make it beat faster or slower by commanding it by my will. But there is a will that controls the heart. It is the divine will that causes it to beat, and in the beating of that heart that you can feel, as you put your hand upon the breast, or as you put your finger against the pulse, an evidence of the divine presence that we have within us, that God is within, that there is an intelligence, a power, a will within, that is commanding the functions of our bodies and controlling them."*** *- Dr Kellogg, MD, in "G.C.B.", 1 April 1901.*

> ***"There is a clear, complete, satisfactory explanation of the most subtle, the most marvellous phenomena of nature, namely, an infinite Intelligence working out its purposes. God is the explanation of nature, not a God outside of nature, but in nature, manifesting himself through and in all the objects, movements, and varied phenomena of the universe. A divine architect who understands every law of proportion, an infinite artist who possesses a limitless power of expression in colour and form; there is, in all the world about us, an infinite, divine, though invisible Presence, to which the unenlightened may be blind, but which is ever declaring itself by its ceaseless, beneficent activity."*** *- Dr Kellogg, MD, in "The Living Temple", 1903.*

Cromwell Hall Health School

Cromwell Hall: Sanatorium for Nervous Diseases.
Established in 1877 at Cromwell, Middletown, Connecticut.

Western Health Reform Institute

Known as the Battle Creek Sanitarium and its health reform ideas taught, and brought to international prominence by the charisma and healthcare genius of Dr John Harvey Kellogg, MD, who developed a rational, scientific and intuitive method of health building and training, brought together in one place and under unified control, all the resources that modern medical science has developed to heal the sick and to prevent future illness by educating all persons in the methods of a healthful living.

British College of Health

Established in 1828 at Hamilton Place, 33 Euston Road, London, England.

Reformed Medical College of New York

Established in 1830 for for the express purpose of teaching the various branches of medical science, and the principles of the botanic or reformed system of practice. The erection of this college led to the formation of a society called the Reformed Medical Society of the United States.

Tilden Health School and Sanitarium

At 3200 Block of West Fairview Place & Grove Street in Denver, Colorado USA (1890) by Dr. John Henry Tilden MD, who was a keen advocate against medical errors and unnecessary drugs and surgery, with the emphasis on healing oneself by means of a healthy diet and good hygiene.

Weltmer School of Magnetic Healing & Suggestive Therapeutics

First established on the 19 February 1897 in Nevada, Missouri. Sydney Abram Weltmer, was a mental scientist. Chiefly self-educated. Studied medicine four years. Licensed to preach, but gave up the ministry and taught school until 1896.

Made extensive experiments in hypnotic phenomena, leading to suggestion in the cure of disease.

Founder of the Weltmer Institute of Suggesto-Therapy, which may be called the foremost school for mental healing in America. Its teachings are partly based on the ancient Germanic “sympathy” treatment which was largely practiced on the continent of Europe, including magnetic stroking and laying on of hands.

A system of suggestive treatment aiming to bring the body and mind into harmony.”

One of the main fundamentals teaches that the mind controls and heals the body through the thoughts it forms.

The School had a Sanitarium where nearly all cases are cured without the aid of drugs or surgery and consisted of a 4 year program that included courses in the art of healing and the Philosophy of Health, Suggestive Therapeutics, Anatomy, Physiology, and Pathology and resulted in the degree of a Doctor of Suggestive Therapeutics (D.S.T.).

Weger Health School

Established in 1915 at the Henry Fisher Mansion in Redlands, California.
Dr Weger, MD, was a disciple of Dr Tilden, MD.

Davis College of Neuropathy

154 West 23rd Street Los Angeles California, USA (1915)

Southern Neuropathic College

Montgomery, Alabama, USA (1921)

Scientific Society for High Frequency And Light Research

Munich, Germany (1928 to 1933), Established by Prof. Dr Ewald Paul, MD

Gymnacolon Darmbad Institut

Munich, Germany, Established by Dr August von Borosini, MD (1926 to 1945)

New Health Society

Sir William Arbuthnot Lane, MD, Bt, CB, FRCS, Legion of Honour, in the early 1920s, an early advocate of dietary prevention of cancer resigned from British Medical Association and founded the New Health Society, the first organisation practicing social medicine.

The teaching of the New Health Society **"We Declare that Civilization has produced many diseases almost unknown among primitive races living in their natural environment.**

The hospitals are crowded with sufferers from Tuberculosis, Cancer, Rheumatism, Arthritis and Gastro-Intestinal diseases, etc., due to wrong feeding, impure food and air, and lack of hygienic knowledge.

There is convincing evidence, that **if Men will eat natural food, adopt right habits, and take sufficient exercise, the diseases of civilization can be kept at bay.**

Out of 50,000,000 persons now living in these islands, at least 5,000,000 will die of cancer unless new and effective measures are adopted.

Statement on the Objectives of The Society

1. To spread the knowledge of the newer discoveries of science which concern the preservation of health and the prevention of disease.
2. To teach the advantages of right food, fresh air, sunshine and exercise through the medium of newspapers, pamphlets, books, wireless and lectures.
3. To co-operate with local authorities, schools, churches, medical officers of health, trade unions, nurses and other women's organizations, welfare centres and every other available agency.
4. To influence caterers and heads of schools, colleges and other institutions, to provide pure, natural and unspoilt food.
5. To secure improvement in the quality and supply of milk, fruit, vegetables, bread and other foods by urging the best methods of production, storage and distribution.
6. To prevent profiteering in food, and to improve and cheapen transport in order to reduce food prices.
7. To adopt every available means of preventing the contamination and adulteration of food and to promote legislation for this purpose.

Nature of Disease Institute

Founded in 1929 by Professor Dr. James Eustace Radclyffe McDonagh, FRCS, remaining its director until 1959.

Dr McDonagh was a British Surgeon at the London Lock Hospital, and a Fellow of the Royal College of Surgeons.

In 1916, he was appointed Hunterian Professor at the Royal College of Surgeons.

"The Nature of Disease Institute was formed in 1929, with a threefold object in view:

1. To approach disease through the front door of health, instead of through the back door of disease;

2. To make the necessary examinations of the soil, plants, animals and man in order to show, how, why and where, the departure is made from health to disease;

3. To establish a fund for the purpose of carrying out in perpetuity objects 1 and 2, on account of the much-needed light they throw upon the manifestations of disease, especially the acute ones, which go by the names of "mosaic" in plants, "distemper" in animals, and "the common cold" and "influenza" in man." - Dr J.E.R. McDonagh, FRCS, in "The Study of the Nature of Disease", The Nature of Disease Institute Second Annual Report, 1949.

The Ideas and the Ideals of Emunctology

The ideas on Emunctology, start from the moment one is aware, that there is something more to Health, than that, which the medical trade is waving at you.

It is a crime against humanity to force upon an individual - in particular -, and upon the population - in general -, experimental Medical Trade Drugs, Services and Products. Our Healthcare Freedoms, our Liberties, our Body Integrity, our Right to Choose to Refuse Any Sort of Medical Trade Intervention.

Humans are not guinea pigs, nor should humans be treated in that way, and this is what is happening. When you start to comprehend that the medicine, the medical trade is not based on science, that it makes its science has it goes along, and that, there is more to Health than that, which the medical trade has to offer. You then realize, that you have no other option than to look elsewhere.

When that which is based on a fallacy, and is of no usage to health, one has to learned from daily experience, when treating both on self, and when treating others. Every time I was made aware of someone's health challenges, I researched and studied, what others have found by their own experiences and observations, for indeed, their work have not been in vain, neither will it be forgotten by the Emunctologist.

Those where then, the stepping stones that where used for leaning, for the advancement in order to understand by experience, both of self and that of others findings and experiences, and to assess what is right from what is wrong, and to establish that which is the Scientific Foundations of Emunctology.

Not to be based upon that of "medical uncertainties", but based upon the Natural Sciences of Anatomy and Physiology. Never forgetting, and utilizing that which: "He Who Is the Light of the World", gave to us all, and which is precious to every creature: Common-Sense.

When one reads medical trade literature, one soon realizes that those individuals called "doctors of medicine" have indeed no clue, of absolutely nothing.

For example, when speaking of the causes of Hypertension (or anything else for that matter), **the Medical Trade generally mumbles nonsensical garbage**, stating that its causes derive from a:

> *"Complex interaction of genes and environmental factors, numerous common genetic variants." - in "Wikipedia"*

Either the Medical Trade, have not figure-it-out, and have no clue on what causes Hypertension, or they are deliberately misleading the public.

In 2019, I met, and treated several individuals who had health challenges, ranging from a month to several years.

Of these, an individual was treated for a sciatica condition, for which he had it for more than 10 years, during that period he consulted several doctors of the

medical trade, in the local village, at the nearest town, and even went to the capital city of other states.

Another case which was treated, was a lady who had a swollen feet and ankle (oedema) for more than 5 months, she had seen at least 3 medical trade doctors, all of them prescribed pharmaceutical drug medication, without any improvement to her condition (to be sure Medical Trade drug medication can't move lymph).

All these individuals where treated, and their conditions where resolved using the Principles of Emunctology, the same principles explained in this book.

During that time, I also met an individual, a fishermen, with a very bad swollen ankle in a paling state, covered with bandages and very much infected.

His condition was an advanced stage of the same type of that of the lady with the swollen ankle oedema.

On questioning the individual, he informed that he had been in that state for more than 7 years, and the doctors of medicine at the hospital said to him that they may need, to remove tissue from his abdomen and place it on the affected feet, in order to resolve the condition.

I wondered, in amazement, as it was a question of applying to it, a few simple treatments to resolve his condition, using the therapeutic methods here described with special emphasis on the application of Hydropathic packs.

One may wonder what where these individuals thinking, they clearly have no clues on how the body works, and what it needed to heal itself.

Another case was a lady that had high blood pressure, and when she felt they stated that her heart was not pulsing enough, thus they placed a battery on her heart.

The question then arises in ones mind: How can you have high blood pressure, if the heart is not pumping it strong enough?

High blood pressure, is an elevation in overall blood pressure, which is the force created by the heart as it pushes blood through the circulatory system.

Method in the Application of Emunctology

If a person has a health condition, and he visits an Emunctologist, he has to assess the origin of the individuals health condition either from a functional or an organic effect in its causation. If the health condition has its origin in function, then it needs to be assessed which anatomical parts are affected, and how can the same area or part be corrected.

If the health condition has its origin from an organic action, the Emunctologist has to identify what metabolic process caused that condition.

Thus the Emunctologist must resolve the condition by the adequate therapeutic methods, and advise the individual not to perpetuate the same errors, or face the same results. Thus following a healthy diet, and maintaining clean the gastrointestinal track is imperative in avoiding organic causes of disease, and this aids in maintaining an individuals good state of health.

A trained Emunctologist will know when is the indication to apply Hydropathic Treatments, Osteopathic Manipulation, Chiropractic Adjustment, all these correctly given in a Neuropathic Manner.

> *"While the indications for treatment in such cases are plain enough, they are not so easily carried out.* ***The cause must be sought in toxic states due to faulty metabolism. We must first eliminate waste and toxic products,*** *and then plan a course of treatment which will prevent a recurrence of such products.* ***The first thing is to place the patient upon a healthy diet. If there is a tendency to constipation, correct it. Let the patient take as much out door life as possible,*** *the more the better.* ***Hydrotherapy is of great value. Under this simple regimen and course of treatment the majority of such cases soon experience great relief and eventually complete cure. But let such patients understand that they can keep well only by right living."*** *- Dr William P. Spratling, MD, in "Medical Record", 1905.*

The importance of the Emunctory system and its effects upon the Health of the physical body where well known in England in 1875, the following printed notice appeared in "The British Medical Journal" of the same year.

Examinations

"An important change will be seen in the following **questions recently submitted to the candidates at the primary-examination for the diploma of Membership of the Royal College of Surgeons:**

1. What evidence exists of the influence of the nervous system on the Functions of Secretion and Excretion? Explain how such influence may be exerted; and illustrate the subject by examples.

2. How much oxygen is consumed by a healthy adult person, under ordinary circumstances, daily? What are its principal purposes in the system? and in what forms is it chiefly eliminated?

3. Describe the diaphragm, its attachments, relations, and action.

4. Describe the thyroid and cricoid cartilages. Enumerate the muscles connected with them; and state the exact attachment of each.

5. Mention in order, from before backwards, the several structures which are in contact with the first rib.

6. Mention the structures exposed on removal of the palmar fascia; and describe their relative position.

Candidates were required to answer 4 (including 1 of the first 2) out of the 6 questions." - in "British Medical Journal", 1875.

"The more or less direct introduction of light is the readiest, the safest, and the most efficient method of dispelling darkness." - Dr Joseph Peel Catlow, MRCS, in "On the principles of aesthetic medicine, or, The natural use of sensation and desire in the maintenance of health and the treatment of disease, as demonstrated by induction from the common facts of life", 1867.

"The Emunctologist should always remember that he treats organs. So-called "conditions" are only indicative of what organs need to be treated first and what is causing the disturbance to same." *- Rui Alexandre Gabirro, Emunctologist*

Chapter 2

Principles of Emunctology

"Dr Baillie, MD the first man who wrote upon the importance of morbid anatomy, on his retirement from [Medical] practice, ***admitted his total want of faith in physic [medicine], and his entire ignorance of the principles of his [medical] Profession."*** *- Joel Pinney, in "The Antidote for the Causes that Abridge the Natural Term of Human Existence", 1847.*

"If they will be guided by reason, nature, and facts, they will have no complicated or chronic diseases to cure." *- Dr E. Johnson, MD.*

"Facts are the arguments of God: the outworkings of his power. He who fights against facts, fights against God." *- Dr F. Lees, FSA.*

"The whole value of science consists in the power which it confers upon us of applying to one object, knowledge acquired from like objects; and it is only so far as we can discover and register resemblances that we can turn our observations to account. ***Nature is a spectacle continually exhibited to our senses, in which phenomena are mingled in combinations of endless variety and novelty. Whoever wishes to acquire a deep acquaintance with Nature must observe there are analogies which connect whole branches of science in a parallel manner, and enables us to infer of one class of phenomena what we know of another.*** *It has happened on several occasions that the discovery of an unsuspected analogy between two branches of knowledge has been the starting-point for a rapid course of discovery. The truths readily observed in the one may be of a different character from those which present themselves in the other. The analogy, once pointed out, leads us to discover regions of one science yet undeveloped, to which the key is furnished by the corresponding truths in the other science. An interchange of aid most wonderful in its results may thus take place, and at the same time the mind rises to a higher generalisation, and a more comprehensive view of nature." - Prof. William Stanley Jevons, in "Principles of Science", 1874.*

"Osteopathic adjustment means to so adjust the body that normal action will be sufficient to supply nerve force equal to the demand for construction, and to keep the body or organ in a healthy condition by casting out all impure substances before they

become oppressive either from quantity or destructive and deadly poisonous chemical changes which result from stagnant fluids in the body. *With this idea in view we are not at a loss to know how to proceed when we detect any cause that retains fluids that should have been passed on and out before such chemical action sets up." - Dr Still, MD, DO in "Research and Practice".*

"The body is in a constant state of change - of waste and renewal. *Oxygen consumes and wastes the many different tissues; we take food to supply the loss; in that food we take into the system the elements of destruction - earthy salts.* ***Every organ and structure, up to a certain period, has the power of reproducing and repairing any waste, after which period the blood vessels become so indurated and lessened in calibre, that their powers of irrigating and nourishing the various structures decline.***
Could these channels be kept free from any obstruction, the brain would act, because the heart would act; the he art would act, because the brain would act, as a perpetual motion*; the functions would maintain the organisation; the renewal would be equal to the waste and decay; there would be a harmony and mutuality of cause and effect,* ***and man, could this be effected, would have an existence almost promising immortality."*** *- Charles Watkins De Lacy Evans, in "Can We Prolong Life?: An Inquiry Into the Cause of "old Age" and "natural Death", Showing the Diet and Agents Best Adapted for a Lengthened Prolongation of Existence", 1879.*

"From the moment of his birth the individual has to maintain a precarious balance between toxins and anti-toxins.
What is far more important than disease is "disorder" - that is, wrong structure and wrong functioning." *- Sir William Arbuthnot Lane, MD in "New Health for Everyman" 1932.*

The Five Essential Points in Securing Health

1. **Pure Air**
2. **Pure Water**
3. **Efficient Drainage**
4. **Cleanliness**
5. **Light**

- Florence Nightingale, in "Notes on Nursing: What it Is, and What it is Not", 1860.

The Foundation Principles of Emunctology

1. Circulation of the Blood, and Lymph.
2. Assimilation, The intake of Air, Water and Solid Nutrients.
3. Relaxation, both Mental (aims, ideas, ideals and attitudes) and Physically (musculoskeletal) levels.
4. Elimination: the natural, and normal functioning of the Emunctories.

Emunctology

Emunctology is the sum of the knowledge of all this individuals. The part in which they all agree is the truth.

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Instruction at the College emphasized the curative powers of the internal and external uses of water, a simple diet, proper exercise, and fresh air.

The school placed little reliance upon medical trade drugs of any kind. Dr John Harvey Kellogg, MD was a student at the School.

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> *"We Declare that Civilization has produced many diseases almost unknown among primitive races living in their natural environment. The hospitals are crowded with sufferers from Tuberculosis, Cancer, Rheumatism, Arthritis and Gastro-Intestinal Diseases, &c.,* ***due to wrong feeding, impure food and air, and lack of hygienic knowledge.*** *There is convincing evidence that if Men will eat natural food, adopt right habits and take sufficient exercise, the diseases of civilization can be kept at bay. Out of 50,000,000 persons now living in these islands, at least 5,000,000 will die of cancer unless new and effective measures are adopted."*
>
> *"There are around 165,000 cancer deaths in the UK every year, that's around 450 every day (2015-2017). Cancer accounts for more than 28% of all deaths in 2017 in the United Kingdom." - in "Cancer mortality statistics", Cancer Research UK, 2020.*

The statement of its objects made by the Society:

1. To spread the knowledge of the newer discoveries of science which concern the preservation of health and the prevention of disease.
2. To teach the advantages of right food, fresh air, sunshine and exercise through the medium of newspapers, pamphlets, books, wireless and lectures.
3. To co-operate with local authorities, schools, churches, medical officers of health, trade unions, nurses and other women's organizations, welfare centres and every other available agency.
4. To influence caterers and heads of schools, colleges and other institutions, to provide pure, natural and unspoilt food.

5. To secure improvement in the quality and supply of milk, fruit, vegetables, bread and other foods by urging the best methods of production, storage and distribution.

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The Law of the Emunctories is Supreme

"Do not read, to contradict and refute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider." - Dr Bernard Langdon Wyatt, MD, FACP, in "Chronic Arthritis and Rheumatoid Affections with Recovery Record" , 1931.

"How egregiously do the greatest men err, whenever they lose sight of facts, or substitute sallies of wit, or specious arguments in physic for observation and experience". *- Buchan*

"When too little fluid is supplied, the blood maintains a higher specific gravity and the poisonous waste products of tissue or cell change are only cast off very imperfectly. The body is, therefore, poisoned by its own excretions, and it is not too much to say that the chief reason of this is because amount of fluid has not been supplied to carry off in solution the waste matter the cells manufacture." - Dr Alexander Bryce, MD in "The Law of Life and Health", 1912.

"The segmental relationship of the gastrointestinal tract must always be kept in mind as disease anywhere along its course may be reflected through its entire length. ***No pathology in the digestive tract, however innocent it may appear, should be overlooked from the standpoint of its ability to produce reflex states.*** *It is impossible to establish any method by which the exact offending member can always be identified, however, if we study the patient from the standpoint of an interdependent and intercorrelated body instead of a combination of separate organs we will do much to solve these perplexing problems." - Dr. E. Applehaus, MD, in "The Problem of the Diseases Colon", Kentucky Medical Journal, April 1931.*

Dr James W. Wiltsie, MD, Consultant in Physical Therapy at the Binghamton City Hospital, Binghamton, New York, is insistence that the benefits of cleansing the Emunctories have a remarkable effect in "promoting tubular and cellular drainage, the healing of diseased tissues, the restoration of normal colon function, the improvement of both capillary and lymphatic circulation, and of liver function. The principle back of free drainage is that infection tends to disappear when drainage is adequate*, and in the absence of a feeder." - in "Chronic Intestinal Toxemia and Its Treatment with Special Reference to Colonic Therapy", 1938.*

If I Were 21

"Excretion: By far the most important item to attend to in regard to the body is the waste pipes, including the colon, the bladder, and the pores. Most diseases have their origin in the colon. I would see to it that it was thoroughly cleaned every day. In addition, I would drink plenty of water, and would take some form of exercise every day that would induce perspiration. Most of my sicknesses have come from self−poisoning, and I would make it my main care to eliminate the waste". - Dr Frank Crane, in American Magazine, New York, 1930.

The First Organ Created by the Foetus is The Emunctory System

The human body starts out by the formation of a small anus. Once the egg begins to split into different cells, at the very earliest stages of development, it become what is known as a blastula. This forms a small opening as it tears open from the inside out, and it is called the blastopore "a miniscule anus", and the rest of the body develops onwards.

The Word Emunctory

Description of Emunctory in Old Dictionary

"The skin is a great emunctory, and carries off waste matters from the body.

The scenes depicted on the emunctory field, showing our ancient duns and raths and cromlechs and grianauns and seats of learning and maledictive stones, are as wonderfully beautiful and the pigments as delicate as when the, scrophulae and glandulae are hard swellings developing in the soft parts, as in the emunctory localities of the veins and arteries, particularly in the neck, armpits and groins, and sometimes in other places.

Chronic, irreversible disease of the lungs; abnormal enlargement of air spaces in the lungs accompanied by destruction of the tissue lining the walls of the air spaces.

Emunctory: The urinary apparatus (consisting of the kidneys, ureters, bladder, and urethra) is known to be the principal emunctory for eliminating and voiding the detritus formed by the continual decay of the parts comprising the animal economy.

Ectrop, any emunctory, or duct; ectropium". - in "The Philadelphia Medical Dictionary", 1808.

"Emunctory: Emuncto'rium; from emungere, to drain off. Any excretory organ of the body, or cavity, containing fluids to be excreted." - Dr Chapin A. Harris, MD, DDS, in "A Dictionary of Medical Terminology", 1855.

"**Emunctory**, Emuncto'rium, from emungere, (e, and mungere, munctum,) 'to drain off, "to cleanse. Emissa'rium, (F.) Emonctoire, Emissaire. Any organ whose office it is to give issue to matters which ought to be excreted." - Robley Dunglison, in "A Dictionary of Medical Science", 1857

Emunctory

"1. excretory or cleansing.

2. an excretory organ or duct." - in "Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health", 2003.

Emunctory

"adj. Serving to carry waste out of the body; excretory.

n. An organ or duct that removes or carries waste from the body." - in "The American Heritage, Medical Dictionary", 2007.

The Scope of Clinical Research of Emunctology

The scope of clinical research of Emunctology is the study of the Sympathetic and Cerebrospinal Nervous System, as related to the mucous membranes, and their relationship and activity more with the lymph and emunctory flow or forces of the physical body.

The Emunctology Practitioner Treatment, is aimed at treating the Organs.

The medical trade "treatment", is aimed at treating diseases, with medical trade drugs. These drugs damage all organs. When the organs have collapsed, the medical trade "professionals", then cut the diseased organs by surgery.

Thus, the Emunctologist aim is at the treatment of the organs of the body, not at treating diseases.

The Organs Composing the Emunctory System

"The Organs Composing the Emunctory System:

1. Liver.
2. Kidneys.
3. Alimentary Canal.
4. Entire Circle of the Mucous Membranes.
5. Skin with its millions of Sudoriferous, and Sebaceous Glands, and Ducts.

These, constitute the machinery, the channels, through the medium of which, the syphilitic poison can be removed from the animal economy.

Although the anatomical apparatus we have to work with is situated in different portions of the frame, and in structure possesses no special homogeneousness or resemblance in its several parts as above named, yet as a group, and in respect to function, they sustain a close affinity or relation; and fortunately, in a practical point of view, they can be brought to do good service either by the same remedial agents, varying in quantity and in modes of administration; or by different remedies so compounded as to perform a harmonious action, and leading to the same practical results.

And thus if a case of constitutional syphilis be cured, it is in this way that these Emunctory forces, inherent in the system, carry away, day by day, in small quantities, the poisonous element, until the last particle is exhausted, and the morbid process engendered by its presence is brought to its final rest." - Dr Silas Durkee, MD, in "A Treatise on Gonorrhoea and Syphilis", 1859.

Thermo-Therapeia
The Heat-Cure

or, The Treatment of Disease by Immersion of the Body in Heated Air

"Looking at the skin in relation to the other organs of the animal economy, we recognise it as one of the great Emunctories or scavengers of the body; and we may fairly place it by the side of those other great Emunctory organs: liver, kidneys, and the lungs.

But taking it in conjunction with the liver and kidneys, and regarding it as one of the three great scavengers of the animal system, we have the following considerations brought before us for reflection.

In the climate of Britain, the skin, in many persons, is not brought into exercise for 6 months of the year; in many, not for 9 months; in many, as in women and persons of sedentary habits, scarcely once in 12 months. Now, this being the case, an increased amount of duty is thrown on the liver and kidneys.

These latter organs are called upon to perform their own office as well as that of the skin; and for a number of years they succeed more or less well.

But after a time, say about the mid period of life, the over-worked organs begin to show signs of failure; we hear complaints of the liver or of the kidneys; the liver becomes enlarged; fat accumulates in the abdominal region; haemorrhoids are developed with congestion of the pelvic organs and symptoms of plethora abdominalis are established.

After the abdominal Emunctory organs, come the heart, the lungs, the brain, and the organs of sense, sight, and hearing.

So that, originating from a mere deficiency of function of one organ in the first instance, a whole series of disorders are engendered, which involve in succession the most important organs of the body.

It is an axiom that; the first step towards the cure of a disease, is the removal of its cause; and if this doctrine be applied in the case that I have just stated.

We have only to restore the skin to its healthy tone and function, to bring back to their allegiance the organs whose function has become disordered by its impairment.

The thermal treatment, by unlocking the pores of the skin, gives to the liver and kidneys, the opportunity of recovering their tone and resuming their healthy function; and the whole of the Emunctories, acting in harmony, gradually lead the way to the restoration of the entire system to health.

But suppose the mischief to have gone further; and' that the disorder of function of the emunctory organs has left behind in the blood a considerable quantity of irritant matter, the pro duct of indigestion and malassimilation.

These morbid materials are moved hither and thither with the tide of the circulation, they communicate a sadness to the blood and with the blood to the entire organism; they discolour the skin; they give pains and aches to the nerves; heaviness and distemper to the brain; and they rack the joints with gout and rheumatism.

Here is a catalogue of diseases all taking their rise in mal-assimilation, all dependant on the presence of impurity in the blood.

How, then, are they to be removed?

We resort to the Emunctories: liver, kidneys, skin.

For the liver and kidneys we prescribe the accustomed remedies; but for the skin directly, and the liver and kidneys indirectly; what remedy is there so simple and yet so powerful as the thermos?

My present aim is directed to the illustration of the uses of the therme, and therefore I recur to it frequently. I would employ the thermos, not always as a primary means, but often as an adjuvant, more than respectable both in character and power.

An increased action of the skin empties from the system a large quantity of water, with the water there pass away saline and effete substances in a state of solution, a fresh addition of water drunk during the perspiratory process also comes away rapidly, until the blood may be said to be washed clean of every

impurity; poisons that have crept unbidden into the blood are drained out as also are the broken and dissolved particles of organic transformations of a morbid type. This operation renders the absorbing powers of the system more than usually active; accumulations of fat are removed; nutritive matters are taken up and medicines find their way more quickly and more abundantly into the blood, and therefore act with greater energy.

Herein we have the explanation of an apparent paradox.

We reduce fat by the thermae, because fat is an excess, is redundancy, and a result of defective emunctory power. We fatten and bring into condition those that are lean by the same means, because we render nutrition more active and facilitate the absorption of nutrient material from the digestive system." - Dr Erasmus Wilson, FRS, in "British Medical Journal", 13 October 1860.

The Nose

"As some gentlemen are not acquainted with the mechanism of their own watches, so they may, perhaps, be excused for not being aware of the office which their own noses are destined to sustain in the human economy.

The nose, says the extensively-learned Johnson, is not merely "an organ of sense"; but it is "the emunctory of the brain", an "emunctory" being the appointed provision in the human frame for separating and collecting what is excrementitious, in order to its ejection; an arrangement so illustrative of forethought and design as to be actually employed by one writer (More, 1662) against Atheism.

Thus, also, Dr Woodward shews in "Natural History", that one main end of respiration being continually to throw off the superfluous fluid of the blood, the lungs are necessarily the grand "Emunctory" or discharging medium of the whole body; while Arbuthnot, in like manner, notices that, as a quinsy proceeds from glandular obstruction, so, any warm liquors which relax those glands open "the emunctories" to secrete the adverse humour.

It would be endless to notice the other corporeal "Emunctories; as the duodenum, or duct, for the passage of the gall from the liver; the equally needed "Emunctories" of the kidneys, the vesica, and other parts not difficult to enumerate; nor, since the admirable use made by Dr Paley, in his "Natural Theology", of the argument of "design" thus acquired in favour of an intelligent and gracious Creator, in the human structure, will any well-disposed mind either think lightly of such an argument, or regret to be reminded of it." - John Poynder, September 1847.

An Account of the Operation of Medicine

"As to the operation of medicines and particularly of purges, Dr Quincy supposes;

1. That all those parts of an animal body, that are vascular, or thro which any fluid passes from the intestines to the minutest fibre, are the seat of the operation of a medicine.

2. That this whole course of circulation or animal motion is naturally distinguished into three different stages, according to the different capacities of the vessels, and the motions of their contents; each having its proper out-let, and that these are the seat of the 3 concoctions, so often mentioned by physical authors:
First in the stomach and bowels, having the anus for its emunctory;
Second all within the circulation of the blood, so far as it retains its colour, having the kidneys;
Third all beyond that circuit, having the skin for its Emunctory.

3. That every medicine, which causes evacuation, is a purge.

4. That every purge operates as a dissolvent, by fusing the juices, and increasing the quantity fit for expulsion; or as a stimulus by accelerating their motions, so as to bring the matter fit for expulsion oftener to the secretory out-let; or both." - Dr John Quincy, MD in "Phil. Trans.", 1745.

A Millennium Held at Bay!

"Even partial appreciation of Acute Illness as commonly curative will banish the fear of disease and loosen its Hold Torpedo the Allopathic Medical Craft, and throw light upon the Divine redemptive evolutionary plan. **Human bodies, impelled by the "Healer Within", are Self Cleansing, Self-Healing "machines".**
Toxic accumulation, from unwitting or wilful abuse, gives rise to disease.
To prevent it, the body reacts from time to time, and extrudes, through the eliminating mechanism put there to that end, this poisonous waste.
When it does so, we are temporarily upset or "ill".
Much fever is a fermentive reaction, the purpose of which is to burn up waste.

"Disease Germs": are mostly man's friend. Their main mission in life is destruction of filth. They are produced by, and bred in disease.

If you don't want their presence or help, Keep your bodies from gathering filth, and live on live foods! Most Acute Illnesses are Nature's (God's) method of ridding our systems of waste, which would otherwise cause disease.

They are “house-cleanings”, “healing crises”, preventing collection of dangerous dirt.

They are Nature's protecting reactions against existing disease. But for Acute Illnesses, the human race would have ceased to exist long ages ago.

Suppression of such protective reactions, however seemingly adroit, is, usually, the height of unwisdom.

A big proportion of chronic disease is a direct result of suppression of Acute Illnesses.

Yet the one really impressive achievement of modern Allopathic Medical “Science”, is the increasingly effective suppression of acute illnesses. Believing these Illnesses caused by the “germs”, the Medical Trade kills millions of germs, and almost as many men.

Abolishing symptoms which are Nature's warnings, or (worse still) evidences of her efforts to heal, without adequate measures to deal with their cause, is merely preventing Nature from achieving her beneficent purpose of protecting us from the consequences of error or sin.

To employ to this end (as Medicine does), means almost invariably destructive and disease, producing in themselves, is surely to plumb the last depths of human ignorance.” - Dr Ulric Williams, MB, Ch.B., in “Hospitals and Hooey or Health?”, 1941.

Concerning the Treatment of Fevers

Restoration of the Secretions

“It is exceedingly important in a practical point of view, ever to bear in mind the method invariably adopted by nature to cure a fever, which is the restoration of the secretions, and in most cases it is by sweat or perspiration. Without this knowledge, there will be error in practice. But when a practitioner is well apprised of this fact, he will at once know what indications to fulfil; in other words, what course of treatment to institute.

Common Treatment

The principal and almost only remedies (if such they may be called) resorted to by physicians in this day (1833), are Mercury, Salts, Bleeding, and Blistering.

I shall not consume time to descant on the impropriety and injurious effects of such practice. This has been, and will be further exemplified in other parts of this work. It is sufficient here to observe, that instead of such treatment proving beneficial, by aiding nature to overcome the disease, it counteracts her salutary efforts, and either destroys the patient, endangers his life, or protracts his complaint; and should his constitution be sufficiently vigorous to withstand the combined influence of these “Herculean remedies”, or, in other words, should the patient recover in spite of them and the violence of the disease, the subsequent

effects injure or ruin his health. The practice is certainly absurd and irrational, and I ask, is it not preposterous in the extreme, and can it be supported by arguments, reason, experience, or facts?

When a person is attacked with a fever, the whole sanguiferous system is stimulated or aroused to throw off or cast out the enemy, and she invariably points, as we before stated, to certain doors, outlets, or excretions of the system as the only natural and proper passages, through which such enemy must be driven from the system; and it is the province of the physician to aid her in this wise and well established effort, and intention; but when such means are made use of, instead of rendering her the necessary assistance, her powers and energies are entirely crushed, weakened, or diminished." - in "The American Practice of Medicine", 1833.

Reformed Practice

General Indications of Cure

"Restore the suppressed evacuations, or the secretions and excretions.

This will remove the offending, or irritating cause, and when this is removed the effect, or in other words the fever, must necessarily cease.

In fulfilling this one indication, consists the whole secret of curing febrile diseases.

Particular Indications of Cure

1. Moderate the violence of arterial excitement.
2. Obviate local inflammation and congestion.
3. Support the powers of the system.
4. Relieve urgent symptoms.

The necessity of fulfilling all these indications must be borne in mind by the practitioner. In every modification of fever, it becomes his duty to render himself an assistant of nature. What she endeavours in the commencement of the disease to accomplish, is, to evacuate the deleterious agents by the proper passages.

The whole business of art, therefore, is to assist her in these two efforts of secretion and excretion of the morbific matter.

Secretions and Excretions

I have already stated, that the great secret of curing fever, is the restoration of the secretions and excretions; the violence of the disease, is just in proportion to their torpor or obstruction, and as soon as they are restored, and perform their offices, **the whole catalogue of symptoms attendant on Fever, at once vanish, like fire before the watery element. When they are restored to their healthy action, how quick does convalescence take place."** - Dr Wooster Beach, MD, in "The American Practice Condensed", 1848.

How to Supply the Place of Medicines by Diet

"He that would have a clear Head must have a clean Stomach."

"The neglect of which is the cause, why we see so many hypochondriacal, melancholy, and vapourish gentlemen, among those of the long robe; the only remedy of which is labour and abstinence.

Most of all the Chronical Diseases, the Infirmities of old Age, and the short Periods of the Lives of Englishmen, are owing to Repletion.

This is evident from hence; because evacuation of one kind or another is 9 Parts of 10 in their remedy.

For not only cupping, bleeding, blistering, issues, purging, vomiting, and sweating, are manifest evacuations, or drains to draw out what has been superfluously taken down.

But even Abstinence, Exercise, Alteratives, Cordials, Bitters, and Alexipharmicks, are but several means to dispose the gross Humours to be more readily evacuated by insensible Perspiration; that new and well concocted chyle, and sweet comminuted juices, may take their place to restore the Habit.

And therefore it were much more easy, as well as more safe and effectual, to prevent than incur the necessity of such evacuations.

And any one may lose a pound of blood, take a purge, or a sweat; by dropping the great meal, or abstaining from animal food and strong liquors, for 4 or 5 days (in Chronical Cases) as effectually as by opening a vein, swallowing a dose of Pills, or taking a sudorifick bolus.

For it is impossible the nerves of those who have slippery bowels, should ever be braced or wound up; for there the cure must begin, where the evil began; and must be communicated thence to the rest of the system, as a rope maker begins the twist at one end of the rope, and communicates it to all the other parts.

Our access to the nerves of the stomach and bowels, is obvious and open:

To the rest, the way is difficult, and far about.

And since a relaxation, weakness, and want of spring in the fibres, is the origin of all nervous distempers, no medicines, but such as contract, stiffen, wind up, and shorten them, can remedy this evil; and they must necessarily contract and bind up the fibres of the stomach and guts, as the parts they first approach and exert their virtue upon.

And he, who without firm bowels, thinks to cure a nervous distemper, labours as much in vain as he who would keep a fiddle-string soaking in oil and water, to make it vibrate or play off a fine composition of music.

By experience and observation, I have found, that in those who have one regular discharge in 24 hours, the time of the progress of the food from the stomach, till its remains are thrown off, is 3 natural days.

And in those who go but once in 2 days, the time is 6 natural days." - Dr George Cheyne, MD, FRS, in "An essay on Health and Long Life", 1724.

Chapter 3

Water & Health

Water is Essential to the Life and Function of Every Living Cell

"In physics, in chemistry, in geology, in meteorology, and in biology nothing else threatens its pre-eminence.

The physicist has, perforce, chosen it to define his standards of density, of heat capacity, and so forth, and as a means to obtain fixed points in thermometry.

The chemist has often been almost exclusively concerned with reactions which take place in aqueous solution, and the unique chemical properties of water are of fundamental significance in most of the departments of his science.

The action of water now appears to be far the most momentous factor in geological evolution.

The meteorologist perceives that the incomparable mobility of water, which depends upon its peculiar physical properties and upon its existence in vast quantities in all 3 states of solid, liquid, and gas, is the chief factor among the properties of matter to determine the nature of the phenomena which he studies; and the physiologist has found that **water is invariably the principal constituent of active living organisms.**

Water is ingested in greater amounts than all other substances combined, and it is no less the chief excretion.

It is the vehicle of the principal foods and excretory products for most of these are dissolved as they enter or leave the body.

Water, of its very nature, as it occurs automatically in the processes of cosmic evolution, is fit, with a fitness no less marvellous and varied than that fitness of the organism which has been won by the process of adaptation in the course of organic evolution.

If doubts remain, **let a search be made for any other substance which, however slightly, can claim to rival water as the milieu of simple organisms; as the milieu interieur of all living things**, or in any other of the countless physiological functions which it performs either automatically or as a result of adaptation." - Professor Lawrence Joseph Henderson, Harvard University, in "The Fitness of the Environment: An Inquiry into the Biological Significance of the Properties of Matter", 1913.

Special Adaptation and Automatic Functions

"But life without water seems unthinkable. Water is the essential elixir of life: a universal ether or universal biological solvent system as it has been termed; the lubricant of life, the rarest element. Water is clearly the conditio sine qua non of all known biological processes without which the aforementioned biochemicals exhibit little or no biological activity. Water is truly an intimate structural element of terrestrial, universal, biology.

How interesting are Henderson's words:

> ***"Countless physiological functions which (water) performs either automatically, or as a result of adaptation", for these are suggestive of properties inherent to water that make life work."***

What precocious insight! Water indeed "adapts" to the stuff of life (carbohydrates, hydrocarbons, lipids, nucleic acids, proteins, etc.), through rather complex hydration mechanisms that vary with the chemical nature of the solute or surface. Water apparently mediates the complex structure of biological macromolecules, such as proteins.

However, even though Henderson instinctively perceived that **water possessed special properties that give rise to "automatic functions" and "adaptations**". - Dr Erwin A. Vogler, in "Biological Properties of Water", 2001.

The Water Balance of the Body

"Water balance may be defined as the daily relation between the total amount of water entering the organism through the ingestion of liquids and food and the total output of water lost from the body by way of the kidneys, bowels, lungs, and skin. In the intake must be included the water of oxidation.

For the maintenance of health the intake must be sufficient to maintain the amount of water in the body tissues necessary for maximal efficiency in metabolism and in the execution of other physiologic processes.

This involves the removal of waste products and the dissipation of heat.

Since heat dissipation constitutes one of the important factors governing the measurement of water in the organism, loss of water by the skin and respiratory tract will be discussed in considerable detail.

Although the loss of water by the skin and lungs, on the one hand, and by the kidney on the other, are to a certain extent inversely proportional, the function the water serves in excretion by these channels is different and can not be interchanged vicariously. **Water constitutes more than 70% of protoplasm, the structural basis of organic life.**

Hence it follows that water is of the greatest significance to life.

Indeed by some physical chemists, protoplasm is looked upon as essentially an aqueous solution in which are spread out colloidal substances of the greatest complexity.

Although we are accustomed to look upon the cell as the seat of metabolism, it is not so clearly recognized that water constitutes the medium in which the chemical changes of metabolism occur, that as a milieu interieur it is essential to life, and that it is fundamental to practically all physiologic processes.

Rubner early called attention to the fact that in starvation an animal can lose practically all his glycogen and fat, and half his body protein, approximately 40% of body weight, and still live, whereas the loss of 10% of the water content of the body results in serious disorders, and the loss of from 20% to 22% results in death.

The necessity of water in biologic processes is universal. Animals whose habitat is far removed from sources of water are favoured with special mechanisms for their protection during water deprivation.

In relation to the duration of life, water occupies a position intermediate between food and oxygen; is more vital than the former, and less vital than the latter.

Role and Behaviour of: Oxygen, Water, and Food

Element	Physical State	Course to Body Cell
Oxygen	Gas	Lungs to blood to cells.
Water	Liquid	Gastro-intestinal tract to liver to blood to cells.
Food	Liquid or Solid	Gastro-intestinal tract to liver to blood to Cells. Complicated metabolism

Water Ingestion and Excretion

Normally, water sufficient for the needs is taken daily in the form of liquids and food. Little or no water is absorbed in the stomach. It passes on into the intestine almost immediately, in small spurts occasioned by the contractions of the stomach.

Taken without food, the passage of water into the intestine is but a matter of a few minutes or at most of from 30 minutes to 1 hour; 495 cc. of 500 cc, ingested has been recovered from the duodenum within 25 minutes (Von Mering).

When taken with food, 2 or 3 hours or more are required.

Constriction of the intestinal vessels retards and dilatation increases absorption (Sollrnann, Hanzlik and Pilcher).

From the intestine it is absorbed rather quickly, the rate depending in part on whether or not it is mixed with food and also probably on the degree of saturation of the body. A small proportion probably remains in the intestine and passes from the body in the stools. It is absorbed from both small and large intestine.

After absorption it becomes a part of the water of the organism and plays its role in one or another of the various phases of metabolism or in the execution of some physiologic function on the part of some tissue or organ.

It may circulate in the blood or lymph stream, it may play a part in any of the numerous hydrolytic or oxidative reactions; it may constitute the water content of the tissues or of one organ as a liquid phase of colloidal solution or as water of hydration, it may serve all the vehicle of transportation; it may be excreted by one organ, only to be carried elsewhere to another field of chemical reaction, or it may act as a lubricant on some glistening surface subject to friction.

It reaches every cell in the organism, and through its properties furnishes the opportunity for chemical reactions, for changes in physical state, and for energy transformation.

Having served these functions it continues to serve in its excretion by way of the kidneys, bowels, lungs or skin, and appears finally in the urine, faeces, sweat, visible or invisible, or as moisture in expired air.

The proportions excreted by these different channels vary greatly from time to time in the same individual even in health, depending upon the influence of almost innumerable factors.

In health, despite the complexity of the role in metabolism, water is ingested and excreted in balanced amounts so that the water content of the tissues remains practically constant and at a level of maximum efficiency.

The mechanism works smoothly and automatically.

The sensation of thirst indicates the needs of the body, and the sensation of distention of the bladder or bowels the desirability of evacuation.

The maintenance of supply.

If water is excreted it must be replaced in order that metabolism may proceed at its maximum efficiency. The need of the body for water is determined largely by environment and metabolism. Water is ingested intermittently as drink or food and ejected intermittently in the urine and stools.

But it is supplied continuously to the cells and is also lost continuously by way of the lungs and skin.

A historical sketch of water balance studies

The first reference to the importance of determining the water balance is made by Celsus in De Medicinae, in which he says, in a discussion of dropsy:

> ***"Nor is it improper to measure both the drink and the urine; for if more fluid is excreted than is taken, so at length there is hope of good health."***

He further quotes Asclepiades, as having instituted abstinence for 2 days in dropsy secondary to malaria.

Araeteus, the Cappadocian, noted disturbances in the urinary output in diabetes.

He says of it:

"Diabetes is a wonderful affection, not very frequent among men, being a melting down of the flesh into urine."

The Water Intake

Water and beverages. Generally speaking more water is ingested than is required by the economy. The chief source of the fluids of the body is water per se, large quantities being consumed also in the form of beverages. Their ingestion results in part from appetite and habit rather than from true thirst.

Water and solid food. More water is ingested in food than is generally recognized. In an ordinary diet as much as a liter of water a day may be taken in the form of so-called solid foods, taking into account the water contents of these foods and also the water resulting from their oxidation.

The number of foods with water content of more than 50% is certainly striking.

The distribution of food in nature is singularly interesting. In the tropics, where the loss of fluid from the body is excessive, foods rich in water abound.

In the arctic regions, fat constitutes a large part of the diet and water of oxidation plays a relatively larger part.

Water of Metabolism

The sources of water of metabolism are:

A. Oxidation of organic matter in intracellular respiration;

B. Other changes in the molecular structure of substances entering into the composition of cells and tissues, such as syntheses, concerned in the building up of dextrose into cellulose or starch, or of amino acids into complex proteins.

Intracellular metabolic water results in dilution of cell contents, which disturbs the osmotic equilibrium between the fluids within and without the cell, which occasions movement of nutriments by osmosis to these centres of dilution and of water and carbon dioxid in the opposite direction.

As a result the water of metabolism plays a unique part and one that cannot be duplicated by water derived from outside the cell.

This holds true for protoplasm of both the animal and the vegetable kingdom.

Relatively, the water of metabolism forms a large percentage of the water required for vital processes in animals; indeed in some animals it supplies the entire need of the economy over long periods of time.

In animals, also, the water demand for the excretion of waste products is large, but in those having little or limited access to water the end products of nitrogen metabolism appear in solid form, that is uric acid, which is relatively non-toxic and the hydrogen content of which is very low.

In many of these animals the metabolism is such as to protect them to the uttermost against loss of water.

The nature of the sensation of thirst

Thirst is the index to the body need of water. It is a sensation of dryness of the mouth and throat accompanied by a desire for water. It develops automatically with the need of furnishing the fresh supply of water to the organism.

Like hunger it is a part of the replenishing mechanism of the body, and like hunger it has been the subject of considerable physiologic investigation.

Hunger and thirst must be distinguished from appetite, which develops as the result of habits in eating and drinking.

No doubt exists concerning:

A. The reference of thirst sensation to the mucous membrane of the mouth, pharynx, root of the tongue, and palate; or

B. The scantiness and stickiness of saliva and mucous in the mouth during thirst.

The latter has been emphasized strikingly by King, a medical officer who studied a troop of cavalry which was lost for 3 and half days without water in the torrid "Llano Estacado" in Texas.

He states that long before the third day salivary mucous secretions had disappeared from the mouth and that "brown sugar would not dissolve in the mouth".

Dryness of the mouth may result from local or general causes. The general causes include factors reducing the general fluid content of the body through excessive loss resulting from profuse sweating, diarrhoea, polyuria, lactation or from haemorrhage and shock.

Role of Water in the Organism

Intermediate water exchange. Much fluid after absorption finds its way back into the alimentary tract.

In fact, the quantity entering the intestines as digestive fluids, far exceeds that taken by mouth.

The amount of these secretions is large.

The amount of fluid excreted into the intestine daily is from 7,500 to 10,000 cc. or from 2 to 3 times the amount of fluid ordinarily ingested by mouth and from three to four times the amount ordinarily excreted as urine or about twice as much as the total volume of the blood.

As the contents of the intestine pass downward, reabsorption of fluid takes place, the amount remaining in the faeces rarely exceeding 200 cc. each day.

Water and heat regulation

Water regulates the temperature of the environment and the organism.

This is made possible through its unique thermal properties.

The specific heat of water is the highest known for any substance, solid or liquid, with one exception. The latent heat of vaporization of water is the highest known, while the latent heat of cooling, is next only to that of ammonia. The latent heat of vaporization is of universal significance in relation to dissipation of body heat because evaporation occurs at all temperatures.

The amount of vapour that air can hold when in contact with liquid is variable, is dependent on temperature and pressure, and is greatest for fluids whose latent heat of vaporization is greatest.

Consequently more water can vaporize than any other substance.

Heat conduction of water, although low as compared with that of some metals, is yet the greatest known for any liquid.

Hence water serves best of all liquids in heat conduction in and away from the body. It is the most ideal buffer for heat in existence, that is, it exerts unparalleled resistance to heat or cold before changing its temperature or its physical state, while in addition its high latent heat of vaporization is of constant value to the organism in the dissipation of heat.

Water, by virtue of mobility is readily shifted so as to meet the constantly changing needs in relation to heat regulation in the body. By virtue of its stability, it places its thermal properties at the disposal of the organism for this important function. Besides, of all liquids, it is the most available.

Water, then, regulates heat distribution and dissipation through its mobility and its ideal thermal properties:

1. High specific heat, which favours storage;
2. High caloric demands for its evaporation, which permit a rapid elimination of heat;
3. High heat conductivity which provides rapid equalization of heat within the tissues of the body (Barbour).

The regulating mechanisms in regard to its dissipation are:

1. The vasoconstrictor centre and the vasoconstrictor fibres in the skin;
2. Sweat and the sweat centres and nerves;
3. The respiratory centre.

The nervous mechanism is responsible for the mammal being homeothermic rather than poikilothermic, and destruction of this mechanism results in its conversion from the former into the latter state.

Physico-Chemical Properties of Water

No less unusual and important than the thermal properties of water are those dealing with physical and chemical processes which take place when other substances are brought into contact with it; processes involving solvent power, ionization, hydration, imbibition, and surface tension.

By virtue of its dissociating power water may acquire catalytic activity.

It is very questionable whether water ever exists in the organism as such; it is present in the form of a complex salt solution and as such conducts electricity and does not act as an insulator as would free water.

Solvent Properties

In the organism water is the universal solvent.

However, it is evident that dissociation occurs and that in solution the molecules of a substance are free to manifest the effect of energy due to their movements.

The process of solution is one of dispersion, similar in kind to that occurring in colloid solutions but differing as to the degree of subdivision and fineness of the dispersoids.

When one considers the number and character of electrolytes, nonelectrolytes, colloids, and gases occurring in the blood and urine, the solvent action of water becomes apparent.

The Water Content of the Tissues

Speaking generally, the amount of water in the body is fairly constant.

Engels has studied the water depots of the body following intravenous injection of salt solution. He found that all the tissues except bone became more watery.

The muscles, skin, and kidneys take up the greater amount of water, increasing their percentage content of water 3.86, 3.23, and 3.83, respectively.

The muscles representing 40% of the body weight take up more than 2/3 of any added water, but continue to act normally in spite of the added moisture.

The state of water in the organism

Water exists in the organism mainly as a salt solution, as the liquid phase of colloidal solution, and as water of hydration.

It is of vital importance since its properties and those of the cell determine the amount of the various substances present and their exchange.

The turgor of cells is dependent on their water content which in turn is dependent on osmotic pressure or the hydration capacity of the protoplasm itself.

The crystalloids in the saline solution of the body exist in rather fixed concentration as is represented in Ringer's solution: sodium chlorid 0.7%,

potassium chlorid 0.03%, and calcium chlorid 0.025%. Locke's solution contains in addition sodium bicarbonate 0.01% to 0.03% and glucose 0.1%. Locke's solution approaches in composition deproteinized plasma and contains both electrolytes and nonelectrolytes.

Blood plasma is composed of water and salts, as in Locke's solution, and in addition proteins, as serum albumin, serum globulin, and fibrinogen, gases, metabolites, enzymes, and special substances such as hormones, and so forth.

Of the proteins the albumin forms somewhat more than 50%, globulin somewhat less than 50%, and fibrinogen from 5% to 10%.

Water and Protoplasm

"Human experience is so much a matter of life on land that it is easy to forget that life in the sea is probably greater in quantity and more varied in kind. Moreover, what we know of water and protoplasm and of the essential relation between them, together with the very extraordinary fact that the body fluids of animals which live on land are saline in much the same way as the sea is salt, makes it an almost inescapable conclusion that life when it originated on the earth did so in the sea and that it was only after a vast period of evolution that there were gradually produced the kinds of plants and animals which are able to exist in the widely different circumstances of breathing the air of the atmosphere instead of the oxygen dissolved in the water of the oceans." - *in "Proceedings Archaeology", 1960.*

Water as a Lubricant

In most mechanical devices involving motion, lubrication is necessary.

Numerous surfaces in the organism are subject to more or less constant friction, which would result in irritation were it not for lubrication. Thus moisture prevents the serious consequences of friction in the pleurae, peritoneum, joints, and eyes.

In the body all surfaces subject to friction automatically control their own lubrication through the excretion of fluid on the surface involved.

In most instances water plays the major part.

Water Output
Factors determining the relative less of water by various channels

The total output of water is determined by the total intake. The relative output by the various channels differs widely in different individuals and in the same individual under varying conditions. Attention might be called to the fact that the amount of water lost by the faeces is the smallest and ordinarily subject to least change, while the amounts lost by the kidneys and skin are greatest and subject to the greatest variations. Roughly speaking, the amount of fluid lost by these channels tends to vary inversely, other things being equal.

Heat is lost to the organism through:

1. Urine, faeces and saliva, which are expelled at body temperature.
2. Expired air (air enters the body at environmental temperature and humidity and leaves it, saturated and at a higher temperature).
3. Evaporation from the skin of sweat and invisible perspiration.
4. Radiation and conduction from the skin. Under certain conditions heat loss occurs almost entirely (98%) by way of the skin.

In the calorimeter 24% of the total heat production ordinarily is lost by vaporation. As environmental temperature increases and conduction and radiation become insufficient, the evaporation of water is of ever increasing importance. At 37°C. heat loss is effected entirely through vaporization.

The factors usually affecting heat dissipation are: climatic conditions; environmental temperature, relative humidity and winds; rate of metabolism and clothing. Heat loss is a surface phenomenon and the amount of heat reaching the surface is the fundamental factor. Heat is brought to the surface by blood, that is, water.

The cutaneous factors are: the emissive powers of the surface; the evaporation of the surface; and velocity of transportation of heat to the surface depending on the conductivity of tissues and the speed of cutaneous circulation (Hill).

Here, we are concerned with heat dissipation only in so far as loss of water enters into consideration.

Water Elimination by Skin and Respiratory Tract

Most of the determinations of water loss through the skin and respiratory tract have been made under what might be considered standard conditions, that is, fasting at average mean temperature and humidity with approximately the same amount of clothing.

As early as 1866, Pettenkofer and Voit showed that daily water elimination by these channels in a fasting man reached as high as 829 gm.

Under extreme conditions the hourly loss may be increased to as much as 1 kg.

Rubner, utilizing a Pettenkofer-Voit chamber, discovered that water elimination is proportional to body weight and not to body surface, that variations in humidity do not affect heat production, and that an increase in moisture in the air decreases the heat lost by evaporation but correspondingly increases that lost through radiation and conduction.

The most comprehensive study of the question has been made by Benedict and Carpenter utilizing an Atwater-Rosa calorimeter.

They found that "the average for 158 days, covering 2,150 hours, shows that the insensible perspiration of several healthy men, sitting, lying asleep or awake, or engaged in minor activities, is approximately 40 grams an hour."

Soderstrom and DuBois utilizing the Sage calorimeter found that normal men between the ages of 20 and 50 years excrete on an average of 29 grams of water an hour, about 700 grams each day, and state that few men depart more than 1/10 from this amount under standard conditions. As a rule the proportion of water lost by the lungs is smaller than that by the skin.

Effect of Food and Fasting

The ingestion of food increases the water output especially at high temperature.

Rubner found that when dogs were given meat, the water elimination was not affected when the environmental temperature was low but that water elimination was increased markedly when the air was warm.

The specific dynamic action of food unquestionably plays a part.

Benedict and Carpenter have shown that a change from a diet poor in carbohydrate to one rich in carbohydrate is accompanied by an increase in weight and by considerable retention of water by the body tissues.

Conversely, a change to a diet poor in carbohydrate but rich in fat is accompanied by loss of water from the body. With the caloric intake approximately the same on a diet rich in carbohydrate, there was an average gain of 88 grams of water a day, while in the same subject on a diet high in fat and low in carbohydrate, there was an average loss of 906 grams of water a day.

Loss of Water by the Skin

Water is lost by the skin as insensible and perceptible sweat. The former is continuous as evidenced by the continuous excretion of salt by the skin (Cramer). Sweating is invoked under high environmental temperature around 37°C.

Quantity of Water Lost by Way of the Skin

Under normal conditions of temperature and humidity this is approximately 500 cc. a day. Nuttall credits Pettenkofer and Voit with 500 cc. Obviously this varies markedly with temperature, humidity, winds, exercise, and clothing.

Sweat may vary from an insensible perspiration to as much as 1 litre an hour (Haldane and Priestley; White).

According to Flack and Hill as much as 10 litres of water (5,800 calories) may be evaporated during a ride in the sun in the South California desert, where the radiant energy reflected from the sand adds its effect to that of the direct radiant energy of the sun. Water is lost by way of the skin in the absence of sweat glands.

Temperature and onset of sweating

Visible sweating appears usually between 30° to 37°C. Von Willebrand observed it in one subject at 30°C. and in another at 33.5°C. Subsequent to the appearance of sweat the local temperature may decrease.

"The temperature of the naked human skin", says Aron, "if exposed to the sun, rises quickly to 36°C., maximum 37°C. Sweat breaks out then and the temperature falls."

For example, the skin surface temperature of the forehead may rise to 41°C. and sink to 35°C.

Sweat

Sweat contains from 97.5% to 99.5% water, and is probably the most dilute secretion encountered in the organism. The lack of concentrating power of the sweat glands is in marked contrast to the concentrating power of the kidneys.

Perspiration has an acid reaction, pH = ± 5.7 (Talbert) and contains, aside from the admixtures of secretions of the sebaceous glands, inorganic salts, chiefly chlorids, and traces of phosphates and sulphates (Kast), and organic compounds of which urea constitutes more than 50%, with smaller amounts of urates, creatinin and etherial sulphates, amino acids, and traces of other metabolic products.

The amount of sweat excreted each day varies tremendously with habits, habitat, and climate. In moderate climates on a daily intake of 3 litres of water the daily loss by sweating during rest approximates 700 cc. for an individual weighing 70 kgm. Heat and exercise markedly increase the amount of sweat.

Innervation of Sweat Glands

The secretory nerves of the sweat glands belong exclusively to the sympathetic nervous system (Langley).

Heat constitutes the most important and most effective physiologic stimulus for the secretion of sweat and acts upon the higher centers.

Sweating is invoked by preventing heat loss and increasing heat production, but as a rule it is evoked most readily by the application of heat.

Availability of water for excretion in sweat is an important factor in determining the quantitative response.

Local heat renders the secreting glands more amenable to stimulation (Schierbeck), while cooling may prevent it entirely (Langley).

Loss of Water by the Kidneys

The urine. Usually the urine is regarded as representing the major part of the water loss from the body, and, generally speaking, this is true.

However, under unusual conditions of heat and exercise water loss though sweat and evaporation from the skin and lungs may far exceed that of the urine.

Urine represents the end result of the work of the kidney.

The Quantity of Urine

Generally speaking, the amount of urine excreted is directly dependent on the water intake and inversely proportional to the amount excreted by the other channels of water loss. Ordinarily the kidney excretes daily an amount of water equal to the difference between the intake and that excreted by the skin, bowels, and lungs when the body weight is maintained at a normal level.

The normal kidney is capable of excreting a small quantity, from 500 to 600 cc. of concentrated urine with a specific gravity of 1,040 or more, or 8 to 10 litres of very dilute urine with specific gravity of 1,001 to 1,002.

Excessive ingestion of sodium chlorid and of sugar results in increased thirst, increased water ingestion, and increased urinary secretion.

The ingestion of large quantities of hypertonic salt or sugar solution, results in extreme diuresis; water withdrawal and failure to replenish the excessive loss results in dehydration of the body and development of fever.

The kidney derives its nerve supply from:

1. The semilunar ganglion.
2. A small branch direct from the splanchnic.
3. A small branch from the plexuses around the suprarenal body and aorta.
4. Sometimes a direct branch from the vagus.

The splanchnic nerves carry vasoconstrictor fibres. Stimulation results in the arrest of renal secretions (Bradford) and section, in increased flow (Claude Bernard).

The vagus, through its action on the heart, exercises a marked influence on renal secretion. Its stimulation in the neck causes a marked decrease of urinary flow, but the presence of fibres directly affecting renal secretions has not been proved.

The nerve control is exercised ordinarily through the vasomotor centre in the medulla.

This may be stimulated directly by asphyxia or anemia of the medulla oblongata, resulting in decrease or arrest of urinary secretion from ischemia of the kidney, or reflexly through the sensory nerves such as the sciatic (Cohnheim and Roy), through cutaneous nerves as in exposure to cold, or through stimuli arising from within the kidney, ureter, or bladder.

But it must be remembered that the kidney can function for months in the absence of all nerve supply, as has been shown by Carrel and Guthrie, and Quinby.

Cerebral control is exercised also.

Brain tumours are often accompanied by urinary disturbances, especially those which involve the pituitary gland or its neighbourhood. The work of Camus and Roussy indicates that independent of any injury to the pituitary gland, polyuria results from the puncture of the interpeduncular space, and that of Bailey and Bremer indicates that polyuria constantly follows a piqure injuring the para-infundibular region of the hypothalamus.

Polyuria (excessive or an abnormally large production or passage of urine) associated with or following:

1. Epilepsy.
2. Migraine.
3. Headaches.
4. Hysteria.

"I have always found the administration of diuretics beneficial in head affections. There is, in such cases, a marked diminution in the quantity of urine excreted; and the kidneys being among the great Emunctories, when they are stimulated to increased action, so as to produce free diuresis, and thus unload the cerebral vessels, mitigation of pain, etc., follow as "cause and effect"." - Dr Thomas Hayes Jackson, MD, in "The British Medical Journal", 12 September 1857.

Nervous Strains suggests strongly the existence of higher centres of control.

The endocrine system also unquestionably plays a part in the control of water balance.

This is indicated by the striking; effect of the subcutaneous administration of the extract of the posterior lobe of the pituitary in controlling the urinary output, in normal individuals following excessive water ingestion and in patients with diabetes insipidus.

Also polyuria results often following extirpation of the posterior lobe of the pituitary or section of the infundibulum.

According to Cushing, the pituitary is involved in the control of urinary output through nerve tracts reaching the kidney after passing from the spinal cord to the superior cervical ganglion and posterior ganglionic fibres.

Similarly, the thyroid gland is concerned in the metabolism of water as evidenced by changes wrought in a myxedematous patient.

On the administration of thyroxin the patient quickly loses weight, largely water, and the dry indurated skin becomes soft and moist.

Water in the Faeces

Under ordinary conditions the water of the faeces rarely amounts to more than 200 cc. in health. Usually it is between 60 and 150 cc.

On a vegetarian diet it may reach 300 cc. a day. Occasionally attacks of diarrhoea develop, for a day or so, resulting in a doubling or trebling of this amount. But on the whole in health the amount is small and fairly constant.

Water Requirements of the body

For continuous health the water intake of the body must suffice to keep the water content at the level for maximum efficiency, from the physiologic viewpoint, irrespective of the loss of water by the various channels of excretion.

The important determinants have been presented.

This necessitates an intake large enough to replenish the store as losses occur.

Additional water is required during childhood for the building up of tissues.

The Effects of Water Deprivation

As has been intimated, the body need of water is indicated by thirst.

According to McGee, thirst may be divided into 5 stages:

1. The mouth and throat become dry; a longing for liquid is easily assuaged by ingestion of fluids.
2. The saliva and mucus in the mouth and throat become scant and sticky; the tongue clings to the teeth or to the roof of the mouth; there is a lump in the throat and endless swallowing; this stage is also greatly relieved by water.
3. The eye lids stiffen over the eyeballs which set in a sightless stare.
4. The distal end of the tongue hardens to a dull weight.
5. Delirium develops with visual illusions of lakes and running streams.

Dryness of the mouth is very striking. Reference has been made to King's report on the degree of dryness of the mouth. Suffering was intense and those who survived did so by drinking their own urine or horses blood. **Thirst is more difficult to endure than hunger.** Viterbi, an Italian political prisoner, who died as a result of refraining from food and water for 18 days, suffered but little from hunger after the first day but experienced terrible thirst until the end.

Withdrawal of water from the tissues

In 1899, Crandall described febrile attacks in infancy, occurring in inanition, which he showed to be due to thirst and which disappeared on the administration of water." - Dr Leonard G. Rowntree, MD, The Mayo Foundation, University of Minnesota, in "Physiological Reviews", January, 1922.

Water and Health

"In health, water is not merely incidental in this connection, merely present as ballast or a reserve in the way in which fat may accumulate in the body.

Water constitutes the medium in which the chemical changes of metabolism occur.

As water is continually lost to the body through various paths, by way of the kidneys, bowels, lungs and skin, it is obvious that the output must be adequately replaced if a healthy "balance" is to be maintained.

Healthy men can starve for a month if given plenty of water.

Patients with fever and toxemia do not tolerate starvation nearly as well, but, nevertheless, they can draw on their bodies for many pounds of fat and of protein and for considerable amounts of calcium and other salts.

A man who has been well fed can begin his starvation with a reservoir of about a pound of carbohydrate and several litres of water.

Now these reservoirs are relatively small and they are the ones on which the clinician should concentrate his attention.

In a short and stormy illness where complete loss of appetite, or nausea, has limited the food intake, we do not need to worry much about the protein and the fat but we must remember that it only takes 2 or 3 days to exhaust almost completely the small glycogen stores of the body and also the small reservoirs of water.

Acute illness is usually accompanied by high metabolism which uses up carbohydrate rapidly.

Fever and high metabolism lead to excessive losses of water through skin and lungs. If at the same time the fluid intake is diminished there will be a serious dehydration of the tissues, especially if there has been vomiting, diarrhoea, or diuresis.

I do not think it is too much to say that the dietetic error that has killed more patients than any other is the neglect of administering enough water. If water cannot be given by mouth, it must be given by rectum, by vein, or by the subcutaneous method.

The Practitioner should remember 2 things:

1. Patients lose more than 600 grams of water a day through skin and lungs,
2. Most people ingest about half of their water in the form of their so called solid foods particularly such foods as lettuce, tomatoes, fruits, potatoes, etc.

When these solid foods are cut off in disease it is necessary to supply a proportional increase in the liquid foods in order to bring the water intake up to the level of that of the ordinary man in health.

In acute disease, we should make a still further increase in order to compensate for the excessive loss of water through skin and lungs.

In each individual patient we must visualize the various metabolic processes and must direct our therapeusis to meet these specific indications." - Dr Eugene F. DuBois, MD Professor of Medicine, Cornell University Medical College; Medical Director of the Russell Sage Institute of Pathology, in "Diet in Disease", Bulletin of the New York Academy of Medicine, 1931.

"The means employed to restore a sick man to health must be of a dissolving and eliminating character in order to rid the body of all its morbid and impure elements." *- Sebastian Kneipp, in "My Will, a Legacy to the Healthy and the Sick", 1896.*

"During the sleep, the patient, in the same manner as one in acute intoxication, has been eliminating the alcohol as quickly as possible. By the skin, through the lungs, through all the tissues of the body, the carbonaceous matter has been oxydised and burnt off. Every movement of every muscle engaged in the act of respiration has done its part towards removing the toxaemic cause of the disease from the system. And ***when the vitiated blood is entirely deprived of the alcoholic poison, and the morbid material is, to a great extent, if not wholly, excreted by the various Emunctories, then, and not till then, does the brain, resume its proper functions, and, each nerve-cell receiving the fair share of healthy blood, the mental phenomena of comparison and judgment hold again their accustomed sway, and the mind acts as one harmonious whole."*** *- Dr Edward L. Fox, MD in "Delirium Tremens", The British Medical Journal, 24 November1860.*

Eliminatory Action of Spa Waters

"Whatever the chemistry of medicinal waters their effects are several and complex. The eliminatory action, as carried out by Guelpa's abstinence-purgative and dis-toxicativy method, described by him at the Annual Meeting in 1910, has proved of much value in certain autotoxic conditions **needing alimentary rest and better excretion. Examples are to be found in over-alimentation and in any condition of autointoxication. The correction of faulty elimination and the "good-riddance" of waste products, coupled with the action of waters and baths upon the Emunctories, is recognized as a chief method of treatment at all spas.**

It is of such proved value that it should not be lost sight of." - Dr S. Watson Smith, MD in "Climate and Health", The British Medical Journal, 28 July 1934.

Climatic conditions will not change the body, unless ye change in mind.

Chapter 4

The Aim of Emunctology

Emunctologist detests pretension and illogical, immature conclusions.
But love and honour that which is logical; the Truth.

"Without a knowledge of health principles no one is fitted for a life's responsibilities". *- A. C. Selmon, MD in "Health And Longevity", 1940.*

"We cannot take down the several pieces and compartments of the animal mechanism, as a watch or engine is taken down to be cleaned and repaired, and then to reconstruct the whole. This is not necessary with the living machine which has an innate power of self-repair and self-cleansing implanted by the Creator, as part of its original constitution. The Whole Art of Healing Consists: in eliciting this power of self-repair and self-cleansing. Man's province in this art is simply to superintend the conservative operations of Nature, to act as the Engineer and stoker of the Human Engine (body), keeping it on the right line, and supplying the proper quantity and quality of materials to work withal, opening the proper conduits and safety-valves, when exterior arrests or internal obstructions occur." - Dr. James Wilson, MD, Member of the Royal College of Surgeons in "The Principles and Practice of the Water Cure", 1854.

To illustrate and explain the Essential Nature of Disease, and the Modus Operandi of Remedies; And thereon to predicate a Philosophy and a Practice of Health which is correct in science, in harmony with all of the Laws of Nature, in agreement with every structure and function of the living system, and successful when applied to the prevention or cure of disease.

1. Cleansing of the Blood Stream, by stimulating the organs of elimination, that the system may eliminate properly.
2. The Correction of the Spine, by manipulations and adjustments this Naturopathically given.
3. Always knowing that thy body is the Temple of the Living God.

Thus Emunctology in a preventative or curative measure (that condition to be produced), is to assist the system to gain its normal equilibrium.

The Preservation of Health and the Cure of Disease; which involve the issue of the rise and fall of nations; and which, next to the Gospel of Christianity, are the most important to the perpetuity of any nation, the permanency of its institutions, and the welfare and progress of the people.

Thus the Emunctologist, removes those things that are an hindrance to the system, be it:

1. Organic by Hydropathy.
2. Functional by Osteopathic Manipulation, or Chiropractic Adjustments, Naturopathically administered.

Thus, it can be said that the entire aim of the Emunctologist is by applying the correct treatment needed, prevent, and reverse Organ Necrosis, and DNA damage.

The Abilities of an Emunctologist

In the application of self, cultivate that gentleness, that kindness, and yet that positiveness which goes with the abilities of a good Emunctologist; sympathetic, but positive; creative in its thought and gentle in its application of its tenets and its truths. Know what ye believe, in thy ideal, but know Who and what is the authority for same.

Emunctology
The Art which Aids Nature

The specifics, and combination of Therapeutic Methods in which the Emunctologist is trained, constitutes its sum:

"The Art which Aids Nature".

The Emunctologist understands that the majority of Health Conditions, arise from a combination of improper assimilation, and consequently improper eliminations. If the body is kept and maintained with care to proper assimilations, that aid and not hinder the eliminations, thus health and longevity both are assured and plentiful.

Thus a balance must be kept in the metabolism and catabolism activities of the organs.

Water, is the overall and main Therapeutic Agent, the Universal Solvent that the Emunctologist records to in its application for the purpose of promoting tubular and **cellular drainage, healing of diseased tissues, restoration of normal function of organs, improve capillary and lymphatic circulation.**

> ***"The principle back of free drainage is that: Infection tends to disappear when drainage is adequate, and in the absence of a feeder."*** *- Dr James W. Wiltsie, AB, MD in "Chronic Intestinal Toxemia and Its Treatment", 1938.*

Remove the Cause And the Symptoms will Disappear

"The advances of medical science during the present century have tended to produce, and indeed have produced, an estrangement between the scientific cultivators and the simple practitioners of medicine.

Principally in two ways. Minute investigation into diseased structures and a dispassionate study of the action of drugs have shown that advanced changes of structure are but little influenced by so-called remedies. Hence a scepticism as to the value of drugs pervades the profession, more especially the more scientific portion of it.

Some, indeed, who have probably no superiors in the art of diagnosis, have absolutely ceased to place any confidence whatsoever in drugs. This disbelief in drugs is supported also by another fact. It has been found that many cases of those classes of disease which are not necessarily fatal recover without any medicines whatever.

The student is thus perplexed and puzzled. This perplexity is increased when you find in standard works of the highest authority that you are recommended to adopt methods of treatment which, as an actual fact, are, justly, or, unjustly, discarded by all practitioners: a For example, you are told in Lectures on the Practice of Physic to bleed persons suffering from certain acute inflammations. It is true you are told only to do so in suitable cases.

But when you discover, both by inquiry and observation, that no one, nowadays meets, with any cases that are suitable, you are not unnaturally bewildered, and, indeed, cannot be accused of disrespectful indocility if you come to look upon the practice of medicine as fudge.

This tendency to undervalue the art is apt to degenerate into disregard for the science when the student seems to see that even those who still have some faith both in the art and in the science, apparently do not harmonise the two.

The general effect of such an experience as this upon the student is, that he attaches a great deal more importance to physical diagnosis, which seems to be an end in itself, than to treatment.

The ideas or principles which may, I think, eventually lead to an alteration of this unsatisfactory condition may be summed up in the term "Functional Medicine." In explanation of this term, and of the ideas involved in it, I request your attention to the following considerations.

What I mean by it is this: that whenever we come to treat a case, to prescribe drugs or particular diets, rest or action, we should first of all consider what function of the body it is that is improperly performed.

To the setting right of that function we should address ourselves. It may be, and indeed generally is, the case that more than one function is (it may be several are) astray. We have, then, further to consider whether it is possible or convenient to attempt to rectify all these at once; and, if not, we have to decide which we should begin with.

Now this method has several recommendations. Amongst the first is, that it is not too high an ideal to be constantly aimed at. In a large number of cases it is closely allied to the principle which, as I have told you, many persons act upon, namely, the treatment of symptoms.

Because every symptom of disease arises from the imperfect discharge of a some function by its appropriate organ. Hence it requires only a slightly higher order of thought than that which is commonly in vogue. Indeed, many persons who profess in only to treat symptoms do rather aim at the treatment of function.

They misdescribe their principles, and so do themselves an injustice.

Now, though this admission may indicate that the principle I am laying down is comparatively wanting in novelty, it is strong testimony to its practical utility.

Practice would be much more imperfect than it is if all those who profess to treat symptoms really contented themselves with doing so.

For this reason: if we treat a symptom merely, we often fail to remove that which causes the symptom.

To give an extreme instance: If a man has a thorn in his hand, and we merely order, opiates for the relief of the pain thus produced, we are very inadequately treating the disease, though we may be adequately treating the symptom.

In some cases treatment based upon such a principle may actually aggravate the disease.

If, then, every person who now professes to proceed upon the plan of treating symptoms would in each case profess to proceed upon the plan of treating functions, there would be a great gain to practical medicine.

Further, this principle would bridge over the lamentable chasm which now divides the science and art of medicine.

Accomplished pathologists and morbid anatomists, whose true knowledge of disease has justly led them to recognise the incurability of many organic diseases, would enhance the benefits they have conferred on mankind if they would condescend to rectify those functions of which the apparatus is not totally disorganised, and thus much misery would be averted, and many lives eased and prolonged.

On the other hand, those who find by experience the limited control which we can exercise even over functions, and the extreme difficulty, with which, they can in some instances be influenced, would gladly hail any assistance which science might afford them by its most recondite researches, when these throw any light upon the laws which govern the growth of cells, the distribution of the blood, or other mysterious acts upon which the discharge of function depends.

Another advantage is this: persons who got as far as I suggest would get further.

It is impossible that any of you who have paid attention to cases in the hospital, and have watched or assisted in their investigation, can have failed to be struck by the fact that one and the same disorder of a particular function may in different cases arise from very different causes.

Take, for example, epileptic fits.

You have doubtless seen them, in the surgical wards, caused by external injury; in the medical wards, you have seen them dependent upon the presence of worms in one case, upon disorder of the stomach in another case, and upon other causes in other cases.

Now, knowing this, and resolving to treat not merely a symptom, which in the case of epilepsy is usually done by a miscellany of reputed specifics, you would naturally be led to examine into the case, closely, and discover, if you could, the function which was permanently disordered, and the cure of which disorder (often lying very deeply hidden) would cure the more apparent and prominent phenomena, of which only the patient complains. Many cases of epilepsy may in this way be relieved.

And remember this, that any specific must influence some function, though we may not know what function is disordered, still less the organ by which it is performed. In illustration of this, take the case of potassic iodide and secondary syphilis.

A man has syphilis, and some time afterwards skin eruption, or sore-throat, or falling of the hair, or painful swellings, or enlarged glands, or albuminuria, or anaemia, or iritis, or dry pleurisy, or simple, cachexia, or a combination of these symptoms. We give him potassic iodide.

The symptoms disappear, and there is no evidence that his health is not as perfect as in his pre-syphilitic period.

Twelve months after, some of these symptoms return. What do we infer from this? We assume that these symptoms arise from a poison in the system.

If so, there must be some organ which manufactures this poison, and for a season ceased to do so; or else there must have been some organ which for a period ejected the poison from the system, and which after a time ceased to do so; some organ, therefore, the peculiar function of which is deranged.

The effect of the iodic salt has undoubtedly been to restore that function to its normal condition. So you see that Functional Medicine perfectly well admits of the employment of such a specific.

Examples of the alteration of one function by the disorder of another might be multiplied almost infinitely.

Another great recommendation of Functional Medicine, in my eyes, is, that it explains the necessity, and thereby justifies the use, of empirical" plans and remedies. I will explain what I mean by empiricism. We seek to modify the function of the kidney. We have but a limited insight into the working of this organ; we know that it consists of certain parts, and we know to some extent the working of these parts. But we know very imperfectly.

We find that in a state of health the quantity of the urinary secretion may be increased in numberless ways. When we come to use some of these means in a case of dropsy, where hyperuresis would be useful, they totally fail.

We cannot tell why this is. We find that one amongst many succeeds. We can no more tell why this is. We only know the fact. Empiricism recognises this imperfection of our knowledge; and it also tells us how best to counteract it.

Do not persist in the use of a drug which does no good, or even possibly does harm, because, judging from some data or others, we have come to the conclusion that it ought to do good; on the other hand, do not cast aside drugs or methods which seem to do good, or have done good, in apparently similar

cases, because, judging from some data or others, they ought not to do good.

Many proofs might be given that such a warning as this, superfluous as it may appear, is not really so, I will give but one.

Dr. Bright, who was the chief discoverer of the diseases which go by his name, was in the habit of using diuretics in the treatment of them.

I have always done so, and in many cases with signal success. Yet, in spite of this teaching by empiricism, their use has been strongly deprecated, because, judging by certain microscopical appearances, diuretics ought to be injurious.

In treating a case of Bright's disease, I try to restore the function which is most seriously disordered. I find that in many cases, not in all, the only way to restore this function to something like its proper performance is to use diuretics.

Functional Medicine leads on a little further in another direction. It leads us to anticipate disease, and so to forestall the enemy.

Thus we find that in the course of certain diseases there is special liability to interference with some particular function, as in the case of the kidneys in diphtheria.

Precautions may in this instance be readily taken which, though perhaps not infallibly, will probably prevent the functions of the kidneys being seriously interrupted, and thus we may prevent the very dangerous consequences which this interruption entails. We can similarly prevent scarlatinal dropsy.

Functional Medicine also justifies, and may therefore restore, some old and wise practices which have been submerged under the advancing wave of modern science.

When it was not well recognised that many diseases tended naturally to cure themselves, methods were adopted for their relief which are now disused, not because they have been proved to be wrong in practice, but because they became unnecessary in theory.

In the weakest patient it is often better to restore a function the irregularity of which is keeping the patient back, than to try to force them into strength by stuffing them with food and tonics and stimulants. How often do we see an enfeebled and disordered stomach thus overburdened and exasperated, in stead of soothed by appropriate diet and quieting medicines.

An organ may be very much diseased without being able to tell us so

Here we would mention that we have heard Dr Gull several times observe that to have prominent and easily detectable symptoms is a good sign, for when the system is very low, an organ may be very much diseased without being able to tell us so.

The experience gained in these cases would appear to confirm Dr Gull’s remark.

It may also be noticed that in those cases in which the symptoms were acute, the patients had for the most part enjoyed good health previous to the rheumatic fever; and when we further call to mind that general experience has long taught that acute sthenic symptoms occur for the most part in the healthy and robust, asthenic symptoms in the weak and delicate, we are led to consider that the acute cases recover well.

Not because they are severe, but because their severity indicates that the system has sufficient power not only to tell us of its sufferings, but further, that it is capable of making a great effort to restore its tissues to a more healthy state of nutrition, and to remove the unhealthy matter by active elimination.

Here we would observe that the clinical experience of other physicians has shown that those cases tend to do the best in which the skin is rather hot, yet perspiring with the rheumatic odour, and the pain distinctly marked (see Dr Fuller's wellknown work on (Acute Rheumatism) - thus agreeing with what Dr Gull's cases tend to teach.

The careful study, however, of morbid anatomy has shown that acute inflammation is not simply active and rapid cell-formation in healthy tissue, but rather acute change supervening upon chronic malnutrition or degeneration of tissue (see Dr. Wilks's remarks in the "Guy's Hospital Reports", Third Series, vol. IV)." - Dr Henry G. Sutton, MD in "Cases of Rheumatic Fever, Treated for the most part by Mint-water", Guys Hospital Reports, 1865.

Digestions & Discharges of the Human Body And the Diseases of their Principal Organs

"A more extensive plan opened to my view which was to explain the procedure, and to ascertain the extent, and limits, **of the three different digestions, and discharges of the human body; to show their analogy, and in what manner they are incident to diseases peculiar to their principal organs or to such as are derived on them, from defects in the former digestions, and discharges.**

There is such a mutual connection between them, that a defect, or error in either, seldom singly exists, without extending its influence to the others.

Sometimes the cause is more evident, and the effects more immediately prevailing in that digestion, and discharge, whose principal organs are affected.

Sometimes they chiefly appear in the succeeding digestion, and discharge, while the original cause is more distant, and latent.

The rules for preserving healthy chiefly depend on maintaining such an uniform strength in the different digestions, that the aliment should be assimilated to animal fluids, **and the discharges be equal to the supplies**, and in a just proportion to each other.

Diseases will arise, when they deviate from this healthy standard; and their difference will depend on the importance of the digestion, or discharges and the degree, in which their principal organs are affected.

To mark, and point out the sources, from whence these various defects and irregularities proceed, will lay the best foundation of explaining the nature, and progress of chronic diseases, and of establishing a rational method of cure; which can never be effectual, until they are corrected and regulated." - Dr Edward Barry, MD, FRS, in "A Treatise on the three Different Digestions, and Discharges of the Human Body. And the Diseases of their Principal Organs", 1763.

Improper Drainage

"Constitutional toxemia alone paves the way for secondary infections.

If lowered vitality, enervation, permits germs to gain a foothold and complicate toxemia, it is but logical to assume that the first step in recovery is to get rid of the toxemia.

This accomplished, the soil is no longer fertile for germ propagation and the secondary infection ceases to exist for want of its most necessary food: i.e., toxin-saturated tissue of low vitality and resistance.

The human body cannot be made dependably or permanently well unless the surplus toxins are removed from the blood and tissues.

At least 75% of all symptoms, diseases, and discomforts disappear with the removal of toxins. No one can expect full health unless he lives in a manner to keep his toxemia below the saturation point and his vital energy high.

All people are more or less toxemic, but only those who are ill are pathologically toxic.

The changes wrought in tissue by repeated and violent physiological disturbances often result in permanent alteration of organic structure, and real disease is always represented by pathological alteration.

Many persons live under the mistaken impression that bowel evacuation represents the whole system of human drainage.

I his is far from the truth.

Only 14% of the unusable waste in the form of toxic poisons finds its way out of the body through the bowel.

It is true that many lateral and brand drains empty into this main sewer.

Of far more importance to the health of the human race, are the large and small arteries and veins and the lymph channels that maintain the circulation.

Of still greater importance to life and function are the millions of microscopical channel, and intercellular spaces that act as middlemen or distributors between the source of supply which ,s the blood, and the ultimate consumer which is the cell.

Everyone knows the harmful results of incomplete intestinal drainage, itself an effect rather than a cause.

And imperfect drainage throughout the entire organism is but another form of constipation, going on continuously as a result of wrong eating even though the bowels move freely every day.

In most persons drainage is obstructed very early in life, due entirely to an overcrowded nutrition.

The functional capacity of the body is not equal to the burden imposed upon it. When nature sees fit to rebel against the practice of overeating we develop what is known as disease or discomfort. These discomforts do not, except in occasional instances, come on at once. It may take years before we find out that we have been injuring ourselves.

1. What precedes and accompanies local swelling, congestion, or inflammation?

Imperfect drainage. This is true regardless of whether the immediate or exciting cause be an injury or an infection.

2. What prevents blood poisoning following wounds or abrasions?

Proper drainage.

3. What relieves the pain and removes the infection from an abscessed tooth?

Drainage.

4. What do inflamed or infected tonsils need?

Drainage.

5. What does a boil or an abscessed appendix need?

Drainage.

6. What about a congested liver, an obstructed gall duct, an infected and debris- engorged gall bladder?
They need drainage.

7. What about lumps in the breast or swollen mammary or lymphatic glands?
Drainage needed.

8. How about certain venereal infections—for rapid cure?
The need is drainage.

9. What does the engorged lung in pneumonia need to relieve it?
Drainage.

10. The mucous surfaces that are congested in acute or chronic catarrh?
Drainage.

11. The sinuses or a mastoid abscess?
Drainage.

12. A post partum infection?
Drainage. We are mentioning common conditions that all of us know and many of us have experienced.

13. Why do these diseases occur in the first place?
Lack of drainage. If drainage had been perfect there would have been no local manifestation.

14. What was undrained?
The veins, the capillaries, the lymph channels, the cells themselves.

15. What caused them to clog?
Too much food, resulting in imperfect combustion and in clinkers instead of an easily removable or soluble ash. Is is the cause of arteriosclerosis in which the caliber of the blood vessels is gradually lessened by the accumulation of waste.

16. What is the condition of the body when arteriosclerosis is already quite easy to diagnose?
Imperfect nutrition plus imperfect drainage.

17. What happens to the rest of the body?
The same identical impairment. The person is dying on his feet, all over, and all the time. The condition is progressive.

18. What then is the crying need of the body?

Drainage, removal of obstruction; opening up of the channels that supply nutrition; and of equal importance, clearing of lymph channels and venous circulation that carry away the debris.

Why seek forever and a day for causes outside the human body when there is so much within that needs correction or drainage?

Cancer

Take for example the simpler form that usually starts as a benign lump in the breast. Often a history of a blow or bruise or injury of some kind can be elicited.

What happens?

The glandular structure is fragile and held together by loose connective tissue.

Bruising or crushing of the cells even in a small area causes local swelling and enough inflammation to obliterate the lymph channels.

The walls of these channels virtually adhere or grow fast to each other so that the lymph can no longer flow through them. This gland structure suffers from lack of nutrition, lack of active and passive circulation. In time this area breaks down and becomes tender or painful. Drainage of the dead or dying cells is obstructed. Nature does not permit dead material to remain in any part of the body without making an effort to remove it.

Dead cells and the substances into which they break down are toxic in character and they gain entrance to the blood stream by breaking through whatever boundaries nature has previously built, around them as protection.

This toxic material comes in contact with neighbouring lymph glands through communicating lymph channels.

Secondary processes or infections are thus set up, and the activity continues until sufficient tissue has broken down to cause a fatal ending.

What can be done about this condition in either the early or late stages?

Drainage and circulation must be established. Surgery skilfully removes such local areas but it does not remove or correct the primary cause, which is obstruction of drainage throughout the body. We cannot conceive that a body-developing lumps in the breast can have a free and unobstructed general circulation. In the affected area the injury prepares the soil. Toxic, undrained waste supplies the irritation, and the stages of degeneration follow in natural sequence.

In the last stages of cancer the toxic material becomes so powerful that it virtually destroys the life of the blood. A condition allied to septicemia or blood poisoning supervenes, and this is invariably fatal. In the early stages of lump in the breast the great majority of cases recover completely if living and eating habits are corrected.

What has diet to do with this?

Much. The highways and byways in the body become clogged because of too much food. To be specific, too much carbohydrate (in the form of starches and sugars) and too much protein; too little of the fruits, salads, and vegetables which contain the alkaline bases. These are natures most effective alteratives.

Why are fruits and vegetables beneficial?

Because they are converted into chemical reagents, solvents, and neutralizers, fruits and vegetables are potent factors in liquefying excretions in the tissues, thus promoting drainage of protein and carbohydrate waste from lymphoid and cellular tissues and the intercellular spaces It is a matter of common teaching and belief that drinking large quantities of water accomplishes the same purpose.

This is an erroneous impression.

Water may to a certain extent dilute the toxic waste.

However, at the same time it dilutes the normal secretions of the body while placing additional labour on the organism in carrying it off, mainly through the skin and kidneys. If the circulation is obstructed and drainage impaired, too much water remains in the tissues, resulting in hydremia or water-logging.

If drainage is unimpaired, the fluids of the body can circulate without being diluted with water.

We refer of course to excessive water drinking as a therapeutic measure. For actual thirst there is no good substitute for water." - Dr George S. Weger, MD in "Genesis and Control of Disease", 1931.

Poor Eliminations

The things that hinder, in the main the body physically, are the poor eliminations. Thus, the aim of the Emunctologist is to set up better eliminations in the body. The Emunctories should be working near normal as possible, all impediments to their workings resolved.

By means of Hydropathic Treatments, combined with Osteopathic Manipulations, given in a Neuropathic manner, the Emunctologist will find that these two therapeutic methods, come nearer to being the basis of all needed treatments for physical disabilities.

What is Disease?

"It was disease that first suggested to man the necessity of direct attention to the preservation of his health." *- Dr Joseph Peel Catlow, MRCS, in "On the principles of aesthetic medicine, or, The natural use of sensation and desire in the maintenance of health and the treatment of disease, as demonstrated by induction from the common facts of life", 1867.*

"It is not long since the most illustrious and philosophical of existing pathologists has been dealing with this question; and the conclusion he has come to is that ***all disease is disordered function. Here, then, I say, is the highest justification for all treatment being based upon the principle of restoring disordered functions to order, and this it is which I have ventured to term Functional Medicine."*** *- Dr Willoughby F. Wade, BA, MB, in "The Lancet", 1 July 1871.*

Personal Cleanliness

"Personal cleanliness is essential to the successful management of disease; that water, and light, and equable temperature, and rest, are requisite to correct morbid excretions, restore normal secretions, purify the vital current, and dissipate and destroy the ever-engendering miasms and infections of such places. There are, aside from accidents, mechanical injuries but 2 sources of disease in the world, namely poisons or impurities taken into the system from without, and effete or waste matters retained. In either case the result is obstruction. These extraneous particles are the causes of disease, and, aside from mental impressions and bodily injuries, the only causes.

So what is this mysterious thing, disease?

Simply the effort to remove obstructing material from the organic domain, and to repair damages.

Disease is a process of purification. It is remedial action. It is a vital struggle to overcome obstructions and to keep the channels of the circulation free. Should this struggle, this self-defensive action, this remedial effort, this purifying process, this attempt at reparation, this war for the integrity of the living domain, this contest against the enemies of the organic constitution, be repressed by bleeding.

Should it be suppressed with drugs, intensified with stimulants and tonics, subdued with narcotics and antiphlogistics, confused with blisters and caustics, aggravated with alternatives, complicated and misdirected, changed, subverted, and perverted with drugs and poisons generally?

The Action of Drugs

1. Emetics do not act on the stomach, but are ejected by the Stomach.
2. Purgatives do not act on the bowels, but are expelled through the Bowels.
3. Diaphoretics, instead of acting on the skin, are sent off in that direction.
4. Diuretics do not act on the kidneys, but the poisonous drugs are got rid of through that channel,
5. And so on.

The Process of Disease

And this equally mysterious entity called disease! Is not its essential nature sufficiently apparent?

The disease is simply the process of getting the poisons out of the system; and so this perplexing problem is also solved.

And what in the name of medical science and the healing art are the diarrhea and the vomiting except efforts of the living system to expel the poisons, purifying processes, diseases?

Any person, who can explain the philosophy of sneezing, has the key that may be applied to the solution of all the problems before us.

Does the dust or the snuff sneeze the nose, or does the nose sneeze the dust or the snuff? Which is acted on or expelled, and what acts? Is sneezing a healthy or a morbid process? No one will pretend that it is normal or physiological.

No one ever sneezes unless there is something abnormal in or about the nasal organ.

Then sneezing is a remedial effort, a purifying process, a disease, as much as is a diarrhoea, a cholera, or a fever.

And this brings me to the rule for the successful treatment of all diseases.

Disease being a process of purification, I do not wish to subdue it, but to regulate it.

I would not repress the remedial action, but direct it.

Patients are always safe, as the remedial action is nearly equally directed to the various depurating organs, or mainly to the skin.

They are in danger just to the extent that the remedial action is diverted from the skin, and concentrated on some internal organ.

Our rule, then, is to balance the remedial effort, so that each organ shall perform its due share of the necessary labour, and no part be disorganized and ruined by overwork.

And to direct and control the remedial effort we have only to balance the circulation; and to balance the circulation we have only to regulate the temperature, and for these purposes we have no more need of drugs than a man has of a blister on his great toe to assist him to travel.

He wants useful, not injurious, things.

All the Functions of Vitality May be Resolved Into 2 Sets of Processes:

1. One transforms the elements of food into tissue, and throws off the waste matters. This is Health: Physiology.

2. The other expels extraneous, or foreign substances and repairs damages. This is Disease: Pathology.

Is this not all plain enough?

Fever has no seat; Fever is an Action

Do not forget the primary question, What is disease?

Fever is one form of disease; and as **disease is a process of purification**, fever must be one of the methods in which the system relieves itself of morbid matter.

How much longer, will medical men expend brain and labour, and waste pen ink, and paper, in looking for a thing, which is no thing at all, and in trying to find a seat for a disease which has no localized existence?

But there are many kinds of fever, and there are precisely as many different conditions under which the process of purification takes place.

A person of vigorous constitution, and not greatly infected with morbid matter, will determine the remedial effect almost wholly to the surface, and this will constitute the inflammatory diathesis of fever, and the continued type.

A person of more gross and impure conditions will have the putrid form of fever, the "typhus".

Another less gross and feebler will have the nervous form of fever, the typhoid. And those who have been longer exposed to malaria or other causes, so that the liver or other depurating organs have become chronically congested or torpid, will have the intermittent or remittent form, etc. **I have indicated the principle which will explain every manifestation of morbid action, and the rationale of all forms of disease."** - Dr Russel Thacker Trall, MD in "The True Healing Art", 1862.

Community is the biggest factor in Health Creation

The fact that the sense of community, and one who lives in a community suffers from less health problems compared to those who live away from community life.

Research data, such as the Blue Zones research, done by Dan Buettner in his published work "The Secrets of a Long Life", shows that people who live in communities live better and longer.

In England other research has been done, and was found that when people who live in isolation receive support from a community, the number of emergency admissions to hospital falls.

"No other interventions on record have reduced emergency admissions across a population." - Julian Abel

It is known, that social isolation does expose every individual to a higher risk of sickness. This is when the mental and the social part of life comes into play, in the health and well-being of each individual in particular and of the whole community or nation in general.

Thus the one is connected to the whole and the whole is affected by the one.

Chapter 5

Definitions

"Do you know I have lost all faith in medicine? I am satisfied that it is all wrong, and that the system of drugs as curative agents will someday be practically overturned, and some other system or method for curing the sick without drugs will take its place in healing the sick." *- Major Abbott to Andrew Taylor Still*

Emunctology deals with all those conditions where the Emunctories, their function has an impediment, hindered or its overwhelmed, thus the work of the Emunctologist involves removing any strains, from all portions of the human body.

The Emunctologist should be able to identify and offer the correct and suitable therapeutic approach Treatment Plan for each type of conditions.

The Emunctologist should always know that he treats, and nature the living God who Is Christ Cures.

The Emunctologist cannot take credit for something he has not accomplished.

Thus the Emunctologist informs that he treats and nature cures.

Let not the wisdom gained in the study of Emunctology be used for self-aggrandizement, self-indulgences, do they not become rather as He gave of old? "Ye shall come and say, Did we not in thy name heal the sick? did we not in thy name cast out demons?", and He will say: "Depart from me, I never knew you!"

Why? Because the desire, the purpose is that self may be exalted, rather than the humbleness of the heart before Him. For he that would be the greatest must be the servant of all. **Thus Emunctology, properly applied in Clinical Practice is the intelligent form in which both Hydropathy, Neuropathy, Osteopathic Manipulation and Chiropractic Adjustment, find their correct application in their time and manner of their useful therapeutic effects.**

In another words Emunctologists are specialists in Therapeutics, not pill prescribers. And just to make it clear **Emunctology is not Medicine (the Medical Trade). To be sure: Medicine is best left to the untutored, or unlearned.**

Thus, the Emunctologist is first and foremost a Hydropath, having a solid base of Materia Medica, which has always been part of Hydropathy, clinical trained and having a good understanding of Osteopathic Manipulation, these given or applied in a Neuropathic manner, having also a good understanding of Chiropractic Adjustments.

In this regards the Emunctologist may treat acute muscular skeleton cases.

The Emunctologist purpose is not to replace the Osteopath, neither the Chiropractor, these professional specialities must always exist, in order to apply specific needed treatment in Chronic cases.

In this regards please see section on referral. In relation with the so-called "Medical Trade Practitioners", this are experts in poisons, and poison substances, should be prohibited under the penalty of expulsion from the General Council, for any Emunctologist to deal in such inadmissible activity in poisoning the body, which is contrary to Reason, Logic and Ethics. (Please read paragraph on page 1471)

The so-called Medical Science is an artificial method, which when carried to excess is commonly termed heroic, in the expectation that these remedies, will of them selves remove diseases.

The Nature of Disease Institute

"The Nature of Disease Institute was founded by Professor James Eustace Radclyffe McDonagh FRCS in 1929.

It was prompted by the desire to establish the view, which emanated from the combination of clinical and laboratory work in medicine, to the effect, first, that there is only one disease; and secondly, that what are known as "diseases" are no more than manifestations of the damage suffered by the protein in the blood of man, wherein lies his main resistance against a host of invaders, comprising physical, chemical, and bacterial agents.

In the course of this work it soon became evident that this view could be extended to animals and plants.

The Nature of Disease Institute, is an independent organization with its own personnel of laboratory workers, Osteopaths and trained Nurses.

It has been working uninterruptedly since its foundation with the object of preventing and combating disease in plants, animals and man.

About 5,000 patients are treated in the Institute yearly, including 500 new cases.

Every new case is clinically overhauled from every angle, and examinations of the blood and excreta are made as a routine.

The Basis of Treatment is:

1. Wash out the large intestine, which the Intestinal Toxaemia, the main cause of acquired manifestations of disease.

2. Correct the Osteopathic Lesions.

3. Restore the damaged protein in the blood to its normal chemico-physical state.

4. Immunize the patient against the activity of the micro-organisms isolated from the excreta, which help to keep the intestinal toxaemia active.

5. Re-examined the patient upon the completion of the treatment, and advised how to carry on in the future.

6. Full written details regarding the case and treatment are sent to each patient, in order to keep the patient informed of what is being done to get and to keep him fit." - in "The Nature of Disease Institute", 1948.

Thesis, Antithesis, Synthesis

The Medical Sect; managed, since the early 1920's, to erased all opposition, all form of thought, was able to squash all Thesis contrary to "medical thought" sometimes called "medical wisdom", that where Antithesis, these where perceived as a treat to the monopoly of the Medical Trade over the delivery of services in alleviating the symptoms of ill health from the general population.

Thus Emunctology is presented, accepted and understood, as an Antithesis to that which is called:

"Medicine", "Medical Science"; The Medical Trade.

Emunctology is the opposite to Medicine.

Difference Between Emunctology and Medicine in Principle and Concept

Emunctology revolves around the concept of Rational Health and Therapeutics. Emunctology follows Common Law in other words, common sense and Logic.

You always known that after 1 comes 2, and after A comes B. Medicine follows Roman Law, chaos and confusion.

You never know where you are, nor if you need another signature or a triplicate copy of something else, or another stamp.

1. On the view and understanding of Human Anatomy

In medicine, depending who you ask, and what books you read, the Human Body is composed either by 10 or 11 Anatomical Systems.

In medicine we humans are looked upon and treated as mere biological skin bags, with loads of chemical imbalances, that need Pharmaceutics to function.

In Emunctology you will learn to identify 12 Anatomical Systems, not 10 or 11 but 12.

Another important understanding of the Human Body, and this makes a big difference between what Medicine, and what Emunctology teaches, is the fact that in Medicine Anatomy Books, only mention the Physical Body, never the less the Emunctologist, is aware and knows that, the Mental and Spiritual Aspects of Man have their place, influence and effect upon the Physical Body, and that, that influence or connection is mainly done via the glands.

2. Oneness of the Human Body

"Nothing Functions in Isolation"

The concept of Oneness, the oneness of the Body:

1. Physical
2. Mental
3. Spiritually

This 3 components work in unison, in the same manner that all organs, work in unison in the one Physical Body.

> *"We who have been dealing with the insane, or as we prefer to say, those suffering from mental diseases, have for years isolated ourselves from general medicine and have considered the patient wholly from the standpoint of the mental picture." - Dr Henry A. Cotton, MD, in "The Relation of Oral Infection to Mental Diseases", Journal of Dental Research, 1919.*

The Concept of Interconnection

The body cannot have a disease manifestation in one part of the body, without being affected in another part of the body.

The Dynamic Pathology of Disease Processes

Emunctology offers a pathology that recognizes that the body is a unicum, and that such a unity is made possible by means of the circulatory system (the blood and the lymphatic), and the nervous system.

The Circulatory System baths all organs and systems, and the nervous system, wires up the different dynamos of the human machine and syncretizes its effector activities. It makes of a group of energy systems one homologous synthesis, the body as a whole.

There is no comprehensible pathology of any organ of the body that leaves this integrating part of the machine out of its reckonings.

The conceptions of inflammation, of toxic degeneration, of fatigue, etc., are all woefully inadequate if the tie that binds all into a unity is forgotten.

The oldest synthesizing mechanism is the vegetative nervous system and hence it is an essential dynamic factor in the understanding of visceral, of all, disease.

"Disease may consist of an excess of action, or there may be deficient action.

The tissue may live too fast, or it may undergo its changes more slowly than in health. There is in many morbid structures or products a greater activity, a more rapid conversion of pabulum into living matter, than in health.

A certain bulk of epithelial or other form of cancer, or of pus, or of the lymph occupying the air-cells of a pneumonic lung, exhibits greater evidence of vital activity than the same bulk of healthy tissue.

It grows faster, it appropriates nourishment faster, and this nourishment more quickly becomes converted into tissue, or is transformed into compounds, totally different from those existing in it before its appropriation, far more actively than in a normal tissue.

The conversion of inanimate pabulum into living matter, which in health takes place under certain restrictions, takes place in these instances under restrictions very much diminished.

To say, then, that "disease is not a new excess of action, but a deficiency; not a manifestation of life, but partial death", - is stating that which is opposed to most important facts of general observation, and is strangely at variance with the facts demonstrated by very many observers in the present day.

Nothing gives life, save that which has life; and this is, at any rate, a sound truth, from which all our speculations upon the essential nature of healthy and morbid changes in living structures must start." - Dr Lionel S. Beale, MD, FRS in "Short Clinical Lectures On The First Principles Of Medicine", The British Medical Journal, 21 February 1863.

The Organism as a Whole

"Sir Arbuthnot Lane was the first to direct our attention to Chronic Intestinal Stasis. Now its importance has become universally recognised.

Chronic Intestinal Stasis is a disease due to abnormal delay in the passage of the intestinal contents through some or all parts of the intestines, and to the absorption of bacterial toxins resulting from intestinal stagnation.

Stasis may commence insidiously, and neither the victim nor his friends may be aware of the mischief that is slowly but surely brewing. Sooner or later, however, the evil compels attention, either by the general ill-health it produces, or by some acute lesion of a tissue or an organ, arising suddenly, and without obvious provocation. So diverse and severe are the changes wrought by stasis that there is urgent need for a widespread understanding of the disease.

He has led us a long way on the road to a correct understanding of the essential unity of disease, and has taught us to regard the organism as a whole, and not as an assemblage of organs in water-tight compartments.

Text-books are of necessity, **arranged under headings classified according to organs or regions. This system, necessary for purposes of instruction, has a fundamental fault. It fosters the fallacy that disease involves individual organs, whereas, in truth, though only one organ cries out for help, the whole system is out of gear.**

This fallacy has imbued the medical profession for so many generations, indeed centuries that it is most difficult to eradicate." - Dr Alfred C. Jordan, CBE, MD, MRCP, in "Chronic Intestinal Stasis, a Radiological Study", 1923.

"Medical men, by breaking up the body into the parts composing it and describing separately the functions and diseases of every portion or organ and by rigorously dividing the art of medicine into innumerable water-tight compartments, have destroyed the true science of health preservation and of disease prevention. The body is not a fortuitous collection of organs and structures, each liable to some special disease or diseases, but a single entity. The sufferings of almost any single part, affect the body as a whole." *- J. Ellis Barker, in "Chronic Constipation", 1927.*

"Case 80: The patient had bow legs, her elbows were hyper-extended and wide-angled; she had acro-asphyxia; all the reflexes were increased except the abdominal, which had vanished; leucorrhoea was troublesome; the left colon was contracted; there was tenderness in the regions of the flexures and ileo-caecal portion, and the ascending colon and caecum were dilated.

The patient was dieted, and had a course of colonic lavage; she took iodine, ichthyol and thyroid internally and of the faecal vaccine.

The patient improved enormously; the nervous symptoms abated, the periods lasted 4 days, and 18 months later she became pregnant.

The abdominal reflexes are not infrequently absent in bad cases of familial Chronic Intestinal Intoxication, even when there is no ascertainable lesion of the central nervous system.

This case shows the futility of giving a name to part of a clinical picture, because it causes neglect of the patient as a unit, and it makes the unthinking doctor prescribe for that part a treatment, the action of which he does not understand and which may do the patient harm.

Disseminated sclerosis is not a clinical entity; indeed, none of the labelled diseases are.

There is no such thing as specific treatment, and in every case the patient as a whole is the premier consideration, not a symptom." - Dr James Eustace Radclyffe McDonagh, FRCS, Hunterian Professor at the Royal College of Surgeons, in "The Nature of Disease", Part III, Section I, 1931.

"In the present era of multiple specialism the maintenance of this right is of vital importance to the future of medicine. It offers a guarantee against the danger that the corpus of medicine will be split up into a number of specialities having no more organic connexion or communication between themselves than the joints on a butcher's counter: there will result an extravagant devotion to technique, and a loss of interest in pathology, which necessarily deals with the body as a working whole." - Dr William Sampson Handley MD, FRCS in "The Lancet", 30 November 1946.

"Professor James Eustace Radclyffe McDonagh FRCS work, extending over a period of 40 years, has shown that no real advance can be made in Ecological Science unless its-branches dealing with the soil, agriculture, veterinary science and medicine are amalgamated.

Dr McDonagh point of the Soil in its relation to disease in plants, animals and man, in the causation and treatment of disease into a whole biological scheme. Dr McDonagh's **Unitary Conception of Disease** is entirely original and is destined to revolutionise the present theories and practice of medicine, which are based on differentiation, or specialism, instead of correlation, or coordination.

The natural corollary follows that food of inferior quality is the most important cause of disease, a fact which has been established beyond doubt by investigators throughout the world.

Research on these lines has made it clear that manifestations of disease in plants and animals can he correlated with those occurring in man." - Professor James Eustace Radclyffe McDonagh FRCS, in "The Nature of Disease Institute, First Annual Report", 1948.

The Principle of Unity

There is an inter-relationship between everything in the Universe.

All things are a part of the single unit: The Universe.

The relationship between all visible objects, is common science.

The relationship; between all elements beyond the visible to the Astralist (the study of the Oneness of God), and perhaps more in particular to the Creationist (the study of all creation by the Creative Forces).

The body, likewise, is a unit, and is the effect of one cause. And the whole is made up of the parts, and the whole was produced as the parts are produced. The same order of work that rules the whole, also rules the parts.

Conversely, the same order of work that rules parts of the body, so small that they cannot be seen, is the same order that rules the whole.

3. Denialism

"It is surprising what influence a professional taboo has upon the mental processes of the individual members.

They do not seem to be able to think independently or reason logically.

Rather than accepting their training and education as an emancipation of thought, and feeling free to use their knowledge in constructive ways, they are restrained by authority and fear of ridicule.

A second misconception, almost as prevalent, is that the symptom complex, Chronic Intestinal Toxemia, has no basis, in fact, that it is entirely subjective in nature. This belief is based largely upon false premises, loose definitions, and a reasoning therefrom with logic not wholly in keeping with the rest of the syllogism (logical argument).

Based on the assumption that to be real, any abnormality must be capable of accurate analysis, laboratory demonstration and cataloguing, the assertion is made that chronic intestinal toxemia, so-called, fails to meet these requirements. Therefore it is not real, but exists only in the mind.

Rigid, materialistic attitude of medicine. Specifically it argues that for every symptom there must exist a physical counterpart, and that through a sufficient thorough counterpart, and that through a sufficiently thorough diagnostic study it may be found. It believes that the whole is no greater than the sum of its parts, Scientifically, this reasoning is faultless.

Clinically, it is fatal. Interpretation of symptoms is dependent upon at least two variables: the personal equation of the patient who complains, and that of the physician who listens." - Dr James W. Wiltsie, AB, MD, in "Chronic Intestinal Toxemia and Its Treatment", 1938.

The Teachings (concepts and ideas) of the Therapeutic Methods described and laid in its foundation in this book will be met by unsound criticism, and denial.

Thus we understand that the Medical Trade suffers from a Chronic stage of Denialism of pretty much all which is based upon logic and good old fashion common sense.

Many of our books in the Central Archives of the Hospitallers Order of the Good News, have the stamps of up to 2 Medical Libraries in the same book, being discarded (withdrawn) twice from these libraries.

The sad part is that this libraries have no copy of these books, to them these books are of no importance to their "science" = Nescience, or "profession" = Trade.

4. Difference Between Sanitarium and Hospitals

The Emunctologist works in a Health Centre called Sanitarium.

Medicine work in Hospitals.

In Medical Hospitals (houses of death, horror and mutilation), the 3 most common conditions which are present in the majority of cases of those individuals arriving at these establishments, so-called hospitals, is found that they are suffering from:

1. Dehydration.
2. Constipation.
3. Acidity.

These conditions in general go hand in hand.

5. The Unification and Correlation of Disease

"If Professor James Eustace Radclyffe McDonagh FRCS is right, must "all the body of workers", (physicists, chemists, biochemists, physiologists, etc.) be wholly wrong, and so place us all under the absolute necessity of leaving the "comfortable habitation" built up for us by them?

Would it not suffice to receive some of the new furniture suggested by McDonagh, and change the aspect and interior of the house and rooms somewhat, retaining all that is known to be sound in the foundation? Medicine does not require to be rebuilt, as you suggest, on account of McDonagh views.

It might well be the better for overhauling and remodelling. It is notorious that our profession is slow to take up new ideas, admitted often wisely so, if criticism and inquiry are fairly carried out. I discussed a year or two ago McDonagh views with a well-known teacher of medicine he had to admit he had never seen McDonagh volumes on the Nature of Disease, far less read them. Such is too often the attitude of too many members of our profession to new ideas.

And those they do adopt they frequently do not seek to understand, but simply use them.

McDonagh works will be found by anyone taking time to study them from the beginning as most stimulating to the mind and helpful to a broader conception of, and renewed interest in, many of the problems and gaps presented by our present knowledge of the nature of disease.

To a man who has read sufficiently the classic textbooks on diseases of this and disease of that, all the different chapters on diseases of the liver, the stomach, the heart, the kidneys, the brain, the skin, and so forth, McDonagh comes as a welcome relief, conveying the thought that the unification and correlation of disease, as near as possible in any and every part, under a common factor, is well worth proving or disproving in an adequate manner by those whose ability and opportunity enable them to do it." - Dr R. O. Adamson, MD, in "British Medical Journal", 21 September 1940.

The Nature of Disease

"Very few, if any, important advances in knowledge have been made by entirely solitary workers. McDonagh has endeavoured to join this select band.

This report of his research makes many statements unsupported by any authority other than himself. McDonagh has some original ideas that might possibly prove of value, but he fails to convince the reviewer that he has established a single new fact.

He considers that "food of inferior quality is the most important cause of disease", and goes on to say that this "is a fact which has been established beyond doubt by medical investigators throughout the world."

This esoteric work is full of diagrams which are clear only to the initiated.

If McDonagh wants to make more converts to his theories he must explain just

what these diagrams are intended to show, "the other journals closed their columns to me because the unitary theory of disease is not acceptable to the medical hierarchy; because this kind of work is not considered research by the Research Councils." - B. L., in "Postgraduate Medical Journal", 1 July 1948.

The study of the Emunctory System doesn't attract major research efforts, and it is all but abandoned, to a profound neglect, by the Medical Trade. The purpose of this book, is to create a collection of written experiences of Physiologists, Clinicians, Physicians, Surgeons, and Radiologists who have spent most of their lives studying subjects that relate to the Emunctory System.

Before reading the present book, it is recommended the reading of the following Books:

1. The Unknown Causes of Disease, or The Idiopathic Nature of Medicine.
2. Medicine, The Cure is Worse than the Disease.
3. Medicine and Poisonous Pharma.
4. Medicine Lies, Greed and Death.
5. The Nescience of Medicine.

This books should be read before one reads the present book. And after reading the statements, research and contents of these 5 books, it should be, by then, more than obvious, that:

A New Field of Health Must Be Established
If Civilization is to be Insured

Facts are the only legitimate pursuit, of science. Demand and exact fair play, prevent bigotry and narrow-mindedness from being inscribed on our civilization and reason prevail. The Medical Trade is rotten to its core. To patch it up, would be a waste of time! Contamination exists at all levels, medicine, the so-called medical science, the medical trade is Diseased!

Not in acute form, rather in chronic form, that in which only the surgical lancet can remediate this diseased condition of the medical trade so-called "science" and its "profession". To discard it, it would be a most important landmark for achieving health for humanity, and to insure hope for the human species in general, and the survival of civilization in particular.

6. Difference Between Emunctology and Medicine (Medical Trade) on the Treatment of Health Conditions

The Motto of Emunctology is: **"A Treatment Plan for all Health Conditions".**

The Motto of the Medical Trade is: "A pill for all Diseases".

"We are all too wise about prescriptions, and too ignorant about principles of treatment." *- Dr Dan Millikin, MD, Professor of Materia Medica, in "The Medical Brief", Vol. 19, 1891.*

The Medical Trade claims to "cure" Disease.
The Medical Trade mind has a fixation with Disease.

Emunctology Treats the Person, and The Body Cures It Self.
The Emunctologist mind has a fixation with Health.

To give an example: Polio (Synthetic Toxic Pesticides such as chemical DDT poisoning), the Medical Trade issues a vaccine for polio, the Emunctologist knows that the so-called "poliovirus" (germ metabolic waste, or toxicity, chemical or organic). **Viruses are non biological entities.**

For the truth is that: **Any poison particle has an inherent virulence principle, depending on its nature, and origin.**

The longer any poisonous particle remains in any system, the greater the opportunity for virulence arises if an increased delay, in its removal from any biologic system is allowed to happen. Thus, any healthy body is more than able to get rid of such poisonous particle without any visible symptoms.

The problem lies in those individuals **whose body systems are already overburden by metabolic waste, and thus all Emunctory channels, will struggle to cope with a further burden of any toxic waste, and more so the bacteria, or germ waste matter.**

Thus, what causes virulence, can be either Metabolic Waste from Cellular Metabolism, and Microbial Waste, or Chemical Poison Toxicity, if the Emunctories are not fully functional, the increase and retention above normal on the amount of any such waste, can lead to virulence.

"The element of danger to the body in these rapidly destructive diseases is less the germ itself than the "toxin" which it creates in growing." *- Dr James C. Wood, AM, MD, FACS, in "The Central Journal of Homeopathy", 1924.*

"During the metabolism of the bacteria, waste products, antiseptic in their action, are excreted; hence when this waste matter reaches a certain concentration, the bacteria can no longer exist." *- Professor Chester R. Longwell, Professor Adolph Knopf, Professor Richard F. Flint, in "A Textbook of Geology: Physical geology", 1937.*

"It has been shown by Gautier that certain alkaloids which he terms leucomaines, having poisonous properties, are formed within the living organism and independently of the action of bacteria - waste or effete débris - by the accumulation of which in the system the vital processes are arrested. As examples of these he gives

betain, guanin, xanthin, kreatinin etc. The accumulation of these substances in the system is prevented either by their destruction by oxidation, or by their elimination through the agency of the kidneys and liver. That products are formed in the living body which, if not eliminated, produce poisonous effects is well shown in cases, for example, of uraemia, gout or diabetes." *- Dr P. W. Latham, MA, MD, in "The Harveian Oration Delivered Before the Royal College of Physician", 1888.*

"I even go farther and starve them in the early stages of this fever, in order **to limit** the peristaltic motion, and **the amount of residue for the bacterial cultural media.** It seems to me that there is much harm done in the too liberal use of internal antipyretics given for the elevation of temperature in typhoid and other cases of fever, thinking that the elevation of temperature is a menace to the recovery of the sick, when in reality it is an advantage in many cases, to a speedy restoration to the normal condition.

The question naturally arises what is the etiology of fever, is it not rather a symptom of a disease, like dropsy and jaundice than a disease itself.

To cure a disease we must assist nature in removing the cause.

A fever is nature's means of trying to remove something foreign to the body, a poison, bacteria, a germ, waste or broken-down tissue in the body.

The elevated temperature is secondary to a primary cause, to remove a morbid material requires high temperature, in order to reduce it to an excretion by means of oxidation.

Usually all the avenues of exit are closed, skin, bowels and kidneys, secretions are locked that the temperature may be elevated to a point of destructive oxidation, the rubbish must be burned in the body, it takes high temperature to do it, nature provides for this in her own way: rapid oxidation of morbid material depends on high temperature.

The procedure is very much marked in intermittent fever; here we have alternate oxidation and elimination, first the rigour which is prodrome of the elevation of temperature, followed by the sweating or the eliminative stage, and a return to a period of health; and in all other fevers these stages follow each other in the same order, the duration of each stage is governed by the specific cause in each case." - Dr J. A. Reader, MD in "Typhoid Fever Treatment",Transactions of the National Eclectic Medical Association, 1908.

Thus the condition called Polio, can only exist when:

1. A load of toxicity builds up and remains in the system, due to malnutrition and affecting the Emunctory system. A correction on the diet and an aid to the workings of the Emunctories needs to be established.
2. A nutritional deficiency of in season fresh fruits and vegetables, and in particular those which contain vitamins A, B1, B2 and lack of iodine.

Thus, **the improper functioning, by overload of the Emunctories caused by improper diet, and in consequence of the lack of certain nutrition elements, this is: a combination which, allows for the "poliovirus" (germ metabolic waste) to develop, and which then, if left untreated can lead to paralysis and even death.**

The best way to treat polio is by prevention, and prevention of polio is by education of parents in correct nutrition, failing that parents will be slaves to the vaccines from the medical trade, and its effects on human health.

The Medical Trade is in the business to manage disease, by treating the local manifestation, or symptoms of disease.

Emunctology Teaches: How to treat the seat of trouble (of the condition), in order to resolve the disease.

7. Difference Between Emunctology and Medicine on Therapeutics

This is another case that serves to lustrate the difference in rational therapeutic approaches between the Medical Trade and Emunctology.

The Emunctologist upon the logical and rational basis of Anatomy, Physiology and Pathology, makes use of Hydropathy as its Principal Therapeutic Agent.

> ***"Why upset 24 feet of intestine with a purgative when the material to be removed is in the rectum or sigmoid, within easy reach of a little water?"*** *- Dr Alvarez, MD, in "JAMA", 4 January 1919.*

"An answer to this query is that but few individuals ever consult a physician before their constipation becomes chronic, and so fail to learn that an enema would be the best remedy to relieve their trouble quickly and efficaciously.

Moreover, even when so advised, they usually, like all average humans, seek the path of least resistance, finding it far easier to swallow a daily pill which helps to aggravate their trouble, than to bother (as they term it) with an enema, which gives better and far more lasting results, within a few moments, than does the pill in as many hours." - Dr Alfred J. Zobel, MD, FACS, Chief of the Department of Rectal Surgery, in "Recto-Colonic Hydrotherapy", American Journal of Surgery, December, 1921.

Treat Functions Not Symptoms

The Emunctologist should focus on treating functions and teach the client on that which is affecting the function (either organic or functional), once function is treated, the symptoms will disappear.

"In practical medicine, as in novels, it is well to have a lofty ideal. If we aim at a high mark we shall shoot higher than if we aimed at a low one.

Going on to state, that many young practitioners set out impressed with the advantages of minute investigation, of accurate research, and of exhaustive diagnosis, find as they get practice that these which have been so freely illustrated in college and hospital, prove very unsatisfactory.

The ideas or principles which may, I think, eventually lead to an alteration of this unsatisfactory condition may be summed up in the term "Functional Medicine." In explanation of this term, and the ideas involved in it, I request your attention to the following considerations.

What I mean by it is this: that whenever we come to treat a case, to prescribe drugs or particular diets, rest or action, we should, first of all, consider what function of the body it is that is improperly performed.

To the setting right of that function we should address ourselves. It may be and indeed generally is the case that more than one function is (it may be several are) astray.

We have, then, further to consider whether it is possible or convenient to attempt to rectify all these at once; and, if not, we have to decide which we should begin with. Every symptom of disease arises from the imperfect discharge of some function by its appropriate organ. Hence it requires only a slightly higher order of thought than that which is commonly in vogue. Indeed, many persons who profess only to treat symptoms do rather aim at the treatment of functions. They will decry their principles and so do themselves injustice.

Now, though this admission may indicate that the principle I am laying down is comparatively wanting in novelty, it is strong testimony to its practical utility.

If, then, every person who now professes to proceed upon the plan of treating symptoms would in each case profess to proceed upon the plan of treating functions, there would be a great gain to practical medicine." - Dr Willoughby F. Wade, MD, in "Functional Medicine", The Eclectic Medical Journal", 1872.

8. Concerning Pharmacy: Poisons and Drugs

> *"**Medicine means any poison for therapeutic use.**" - in "Standards for the Uniform Scheduling of Medicines and Poisons", No.20, Australian Government, Department of Health, March 2018.*

Emunctology is not Medicine, neither promotes de use of poisonous drugs, nor offers to perform the cutting of organs in a needless manner.

All prescription medicines (pharmaceutical drugs) are poisonous substances, of which the majority have a patent, thus they constitute a newly created substance which its occurrence is not natural in nature.

Some Fundamental Concepts and Terminology in Emunctology

Cachexia

"The term cachexia is sometimes used to imply a self-existing disease, and sometimes a secondary affection depending on some primary diseased condition, as syphilis, scrofula, etc.

1. Cachexia is constantly an expression of the presence of certain diathetic maladies in the child, as of syphilis, cancer, etc.

2. Cachexia occurs in connexion with deficient alimentation and bad hygiene, apparently independently of any other disease. In some of these cases, gastrointestinal and other lesions are induced; but, when these are absent, the cachexia may be removed by proper attention to the food and other hygienic conditions.

3. Cachexia may occur in connexion with chronic, and with some acute local diseases. It is most marked in gastrointestinal affections, especially in entero-colitis, where the appearance of the patient reminds one of some cold-blooded animal. Bouchut has described children labouring under this disease as "looking like little old men": and there is no malady in children which so perfectly removes the cellular tissue of the face." - in "Association Medical Journal", London, 1854.

Emunctory:
"a) That has the function of conveying waste matters from the body.
b) A cleansing organ or canal; a term applied to the excretory ducts and organs of the body. (Syd. Soc. Lex.)

1601 - Holland Pliny Gloss: Emunctories be those kernelly places in the body, by which the principal and noble parts doe void their superfluities.
1651 - Biggs New Disp. 172 P 234 God hath ordained sufficient Emunctories for any filth whatsoever." - in "The Oxford English Dictionary", 1991.

Ptomain
Certain pathogenic Micro-Organisms produce chemical poisons (toxins) these are called Ptomaines.

"An infectious disease arises when a specific, pathogenic microorganism, having gained admittance to the body, and having found the conditions favourable, grows and multiplies, and in so doing elaborates a chemical poison which induces its characteristic effects." - Vaughan and Hovy, in "Ptomaines and Leucomaines", 1888.

Leucomain

The Leucomaines are metabolic waste derived from the Cells and the Ptomaines are metabolic waste derived from the Bacteria.

Septic

1752 - "Pringle Obs. Dis. Army III. Vii. (1765) 337" - The miasma or septic ferment... being received into the blood. Ibid. App. p. xxxviii, It would seem that salt is subservient to digestion chiefly by its septic virtue.

1806 - "Med. & Phys. Journal. XV. 79" - If this matter is the sceptic principle, the foundation of all these Chronic Diseases.

1873 - "F.T. Roberts Handbook. Med. 92" - The symptoms are of such a low type... that they may be truly termed malignant. The terms "putrid" or "septic" are sometimes applied to fever under these circumstances."

1991 - "The Oxford English Dictionary" 2nd Ed. - Putrefactive, putrefying; in mod. use, of disease, caused by the absorption of the products of putrefaction.

Sepsis

Septic infection: A toxic condition resulting from the spread in large numbers of pus-forming bacteria in the body and their toxins from a focus of infection.

Acidosis

"A number of different criteria have been suggested as a measure of the degree of acidosis:

1. Lowered carbon dioxid combining power of the blood;
2. Lowered alveolar carbon dioxid tension;
3. Decreased affinity of hemoglobin for oxygen;
4. Reduced alkalinity of the blood;
5. Increased hydrogen ion concentration of the blood;
6. Increased intensity of urinary acidity (hydrogen ion concentration);
7. The retention of alkali by the body in cases in which the kidney is capable of rapidly excreting an excess of alkali.

Myofascitis

A Toxic Inflammation, or metabolic change of muscles and their associated fasciae, is the commonest cause of low back pain. Dr Albee, MD found that among 1,188 cases, trauma was a factor in only 25%, this points to the condition on infected foci, such as constipation with an elevated histamine index of the stools, uric acid retention, nervous strain or vitamin deficiency and allergy.

> *"Myofascitis is a local manifestation of a toxic condition of the blood, evidenced by low grade inflammation or toxic involvement of the muscles and fasciae, the symptoms predominating at the fascial insertions of muscle to bone." - Dr Fred H. Albee, MD, Sc.D, in "JAMA", 3 November 1928.*

Toxaemia

The term "toxaemia" is used in its broad meaning as defined in Webster's Collegiate Dictionary, 5th Edition, 1941:

> ***"Any morbid condition caused by the presence of toxins, or other toxic substances in the blood."***

Toxic

The term "Toxic": "Of, pertaining to, or caused by, poison or a toxin."
The word "toxin" should normally be limited to specific toxins.
I have, however, used this term broadly, at times, to include poisonous and irritating substances as well as specific toxins.

Systemic Toxicity

The Toxic Effects of Chemicals, Food Substances, Pharmaceuticals.

Description

Systemic Toxicity are the Toxic effects that result from the absorption and distribution of the waste from the metabolic process of digestion, from poison material from Medical Drugs, Pills and Medication and from chemicals.
These these poisons need to be expelled from the body by overworking the Emunctory system and its organs. So every time poisons or toxins enter the body it is the Emunctory system that is capable to remove it from the body.
The most powerful tool in the defence of the body is the Emunctory System and its organs, without it life is simply impossible, when the Emunctory System collapses, so does life in the physical body.

Systemic Toxicity are poison substances which are the result of:

1. The waste from the metabolic process of digestion.
2. The poison material from Medical Drugs, Pills and Medication.
3. The toxic effects of Chemicals.

Definition

Systemic Toxicity is one that affects the entire body, or many organs rather than a specific system or organ. The term Systemic Toxicity refers to the effects of this poisons once in the system and the manner in which they act upon the physical body, which is not localized in one area, but normally spreads to all body organs and systems.

Symptoms

Symptoms of Systemic Toxicity are normally noticed, and manifested in either one or two organs; the skin (the largest Emunctory organ) is normally one of such organs affected, being the most visible one. The other one being the colon.

In systemic toxicity much of the effects remain unseen, the skin, pain and discomfort are normally present making, alerting the individual to the presence of systemic toxicity.

Illustration

To illustrate what Systemic Toxicity means the following article is given.

Systemic Adverse Reactions

"The systemic effects of Local Anesthetics (LA) are of little or no therapeutic benefit and untoward effects arising from their use may be categorized as being adverse reactions.

There is little justification for using these drugs systemically.

Most reactions are due to high plasma levels resulting from the rapid absorption of the drug or exceeding the recommended limit.

This is usually due to thoughtlessness or lack of awareness of the hazards of these drugs.

The initial effect usually observed from circulating high plasma levels is one of central excitation. Yawning, excitement (often termed hysteria), nausea and vomiting may be the prodromata of developing excitation. Twitchings of the small muscles merging into generalized convulsions of the tonic or clonic type may follow. Convulsions are of short duration, as a rule. Their duration and severity are influenced to a large extent by the total quantity of drug absorbed, the blood level, and the rapidity of clearance from the blood stream.

Drugs such as procaine or chloroprocaine are rapidly hydrolyzed by the plasma esterases.

The excitation caused by these is short-lived. Drugs such as lidocaine (Xylocaine) or mepivacaine (Carbocaine) are amides and are, therefore, not hydrolyzed in plasma by esterases, but instead are metabolized in the liver.

Clearance from the plasma may not occur as quickly as in the case of those hydrolyzed by esterase and the convulsions may then persist for longer periods of time.

Drugs which are slowly hydrolyzed are more toxic systemically than those which are hydrolyzed quickly. Little or no local destruction occurs.

The generalization that drugs which stimulate the nervous system will, if given to excess, cause depression of that system appears also to hold true in the case of local anesthetics. The convulsions that may occur may be fleeting; a comatose state, accompanied by respiratory failure and areflexia (below normal or absent reflexes), may develop.

The convulsive activity of these drugs has been well emphasized by pharmacologists and clinical teachers. Most physicians, therefore, are aware of its possible occurrence and mode of handling.

The convulsions are, however, the more innocuous manifestations of systemic toxicity. Some drugs (lidocaine) produce drowsiness, sleepiness and amnesia without any other manifestations, even in therapeutic doses.

Untoward Effects

Butacaine - Systemic absorption is a possible hazard, particularly when the drug instilled in the urethra. Signs of Systemic Toxicity include: Anxiety, Pallor, Dyspnea, Convulsions, Sudden Fainting, and Respiratory Failure. Several deaths have been reported." - in "The United States Dispensatory", Vol. 27, 1973.

Disease

Discomfort can be caused in the Human Body by 4 Sources:

1. Toxaemia, (Organic)
2. Nutrient Deficiencies, (Organic)
3. Structural Musculoskeletal Misalignment, (Functional)
4. For Life is a Continuous Experience, (Nature, Mental, Spiritual)

1. Toxaemia

What is called disease is not a disease at all, rather the condition or the state of which an organ or system, or several organs and several systems of the body are in a state of over burden and thus are malfunctioning with the load of metabolic toxicity.

Thus disease is not a living organism, disease is not something that is alive.

What the untutored mind refers to as disease, is the majority of cases the accumulation of Morbid Matter. Areas where stagnation of Morbid Matter starts to accumulate, this gives rise to what is referred to as Chronic Condition.

The only exception to this truth, is the advanced stages of cancer (a group or several types of malignant and invasive growth or tumour) where the tumour becomes and acts, as if it is a distinct organism, in competition with the host body.

2. Structural Musculoskeletal Misalignment

On Deformities of the Spinal Column

"The progress of strumous disease of vertebrae is often destructively insidious, and sometimes simulates other diseases.

(Strumous disease, in pathology refers to suffering from scrofula: form of tuberculosis tending to cause; enlarged lymph nodes and skin inflammation.)

Strumous disease of the lumbar vertebrae sometimes simulates hip-joint disease. The disease being situated on the anterior portion of the column, involves neighbouring structures; whether or no any pus be formed and point outwardly, the psoae muscles, usually on one side only, are, from juxtaposition and mechanically, interfered with, the voluntary movement of the hip suffers, claudication and atrophy ensue, and sometimes disease of hip is incorrectly diagnosed.

These errors of diagnosis are sometimes excusable, as the constitutional symptoms of strumous disease in the lungs, vertebrae, or hip are the same.

The total oversight of the disease is not remarkable when its course is very chronic, and the constitutional reaction is so feeble as not to engage attention.

The most favourable termination of strumous disease with deformity of cervical, dorsal, or lumbar portion of the spinal column, is that in which the disease proceeds in a chronic form - involves a limited number of vertebrae

only, and the resulting accumulation of pus or softened tuberculous matter is not discharged outwardly or into neighbouring internal organs, but is absorbed, leaving only the putty-like or calcareous deposits found many years afterwards attached to the front of, or in the vicinity of, the decayed bodies of the vertebrae.

Sometimes the pus travels outwardly, constituting the too well-known psoas and lumbar abscesses. In some instances, probably, the matter takes the course of the root of the lungs, the bronchial glands, and the trachea; although this is a comparatively rare termination. It may be discharged into the descending colon, and escape per anum. Profuse suppuration may continue for weeks through this channel, with simultaneous evacuation of masses of coagulated lymph; the so-called "sloughy cellular membrane" discharged from abscesses in the limbs much resembling the material discharged in diarrhoea tubularis (croupal).

Hippocrates (Sydenham Soc. Transl. Vol. II, p. 603), speaking of disease of vertebrae, states:

"Some have been carried off by a dysentery when it becomes chronic."

Dr Adams, MD the learned translator, expresses difficulty in comprehending this assertion of Hippocrates, and states:

"Those cases in which the disease is said to be carried off by dysentery, were no doubt of a rheumatic nature, and not connected with organic disease of the vertebrae."

The author's observation of the terminations of disease of the spine leads him to confirm the accuracy of the idea of Hippocrates, in so far as concerns the existence of a connexion between the dysentery and organic disease of the spine.

By dysentery, Hippocrates here probably meant discharge of pus per anum, with, as he terms it, "blood and scrapings of the bowels"; or Hippocrates may have alluded to another fatal mode of termination of caries and deformity of spine, namely, that of diarrhoea, caused by tuberculous, follicular, and mesenteric disease, or by aphthous inflammation of the tube, with hectic.

The author in one case thought he witnessed the discharge of a considerable length of gangrenous intestine. It is unnecessary to do more than allude to some of the secondary evils of all spinal deformities, which diminish the capacity of the thorax and abdomen, and proportionately embarrass the functions of the contained organs.

The knowledge of the extent to which severe spinal distortion may aggravate internal disease will cause the attendant to be more than usually solicitous and vigilant during the earlier stages of inflammatory disease.

The effects of distortion on the physical and moral condition of the individual

It is undeniable that the consciousness of an infirmity of this nature has displayed itself in a most marked manner in many individuals who have been thus affected. Historians have described the influence of deformity in alternately stimulating the cultivation of the worst and of the best passions and instincts.

The impeded development of the trunk from extensive deformity, or wasting of a member during the growing period of life, often appears to occasion in the system a reserve-fund of nervous and nutrient energy, which may be devoted to the elaboration of those parts the development of which is not impeded.

Hence the mental vigour and surprising activity of the unaffected organs.

Deformity of a part of the body may produce effects on the mind in a manner similar to those of a moderately sedentary mode of existence, the nervous and nutritive energies, unexpended in the muscular system, being employed to develop and sustain the mental faculties.

The phenomenon of which the explanation is here at tempted may probably arise from a circumstance of more general application - the anatomico-physiological state of the nervous system. It cannot be doubted that mental activity, in whatever direction it be exercised, is, as well as corporeal activity, influenced by the more or less extensive development of portions of the nervous system; and the study of pathogeny shews that the liability of an organ to disease increases with its physiological development.

This view should, however, be qualified by the consideration, that to a certain point development and functional activity produce only the highest degree of healthy action; but when excited beyond this physiological degree the action becomes morbid. Many distortions originate from maladies of brain and spinal cord; others appear at least to have been remotely influenced by the nervous system of the parent, or of the affected individual." - Dr William John Little, MD "On the Nature and Treatment of the Deformities of the Human Frame", 1853.

Elan Vital, Vital Force

Forces or energy as produced in the functioning of organs, many as related to the Vital Force of Life; many as related to those of the Involuntary Forces.

Therefore it is necessary to provide the conditions for the body in creating itself, that necessary vital force to give out the forces necessary to keep the body physically fit. It is well for the body to know and feel the highest vibrations in its self-development, **for with all the forces through the spiritual self, the development of physical forces must come with the creation of cellular force sufficient to give the best vibration to the whole body.**

Thus the Emunctologist uses the principles of Emunctology to achieve a more perfect elimination, and to add that vital force necessary to keep the body in health by the application of that which is necessary and found in Hydropathy, Osteopathy and Chiropractic treatments, these given in a Neuropathic manner.

Then the development of the physical force, through properties given as treatment, as the body determines in its own mind and force that which is necessary for it to keep.

The human physical body is a compound being, in which a spiritual entity is alive and active in the body, and more especially in the nervous centres, thus the nervous system, furnishes the physical conditions necessary in our being, to enable the mind to be active in sensation and control of the muscles.

> *"Hydropathy recognises and acts upon the great principle enunciated by Hippocrates, that our Natures are the Physicians of our Diseases. It is a principle granted, in one shape or another, by all physiologists, that there is a certain power or energy, which presides over the entire functions of organized structures, and gives harmony to the action of each individual part.*
>
> *This power is termed the vital force. No physician who knows anything of his profession,*

will deny that it is to this vital power that we must look to accomplish the recovery of the frame, or of an organ, and that the object which therapeutics, of whatever kind, has in view, is to assist Nature to accomplish the cure." - Ben Rhydding in "The Principles of Hydropathy", 1858.

"The science of Chiropractic is in no way related to the science of machinery. Its phenomena are dependent upon vital force, not that of dynamics. The structure of the body is defined under that of anatomy, not metalography - a treatise on metals. Bodily functions depend upon vital force, not dynamics. The existence of metals, whether in the form of machinery or that of ore, depends upon certain inanimate qualities, whereas the existence of animals depends upon functions." - Dr Daniel David Palmer, DC, in "The Chiropractor", 1914.

The Vital Energy of the Whole Man is localized in the Vegetative System

"The functions of our body and soul lie more than we formerly believed in the mysterious field of the unconscious. In acute diseases, one of the first symptoms is loss of appetite, of the impulse to maintain our body. And in severe diseases the whole impulse for preservation of life may be entirely lost.

The diseased state of the whole body has influenced the mentality. Our organs, our glands, our whole body influences our mind. The psychical processes are not localized in the brain cortex. Life and soul are a function of the whole organism". - Professor Dr Friedrich Von Müller, MD in "Anatomy of the Brain from a Clinical Point of View", American Journal Medical Science, January 1928

3. For Life is a Continuous Experience

For Life is a Continuous Experience and the mind, the soul, the will, are those influences that act through the material manifestation for the improvement, the development, or for the retardment to the whole of the experience.

Thus in this third causation of disease (nature, mental, spiritual): there is that which is those conditions that can range and which are termed from such those of in the class of fears, fobias to those those conditions which may be present since birth. That nothing happens by chance, neither nothing happens without a reason, or a purpose. For everything which is part of the physical was conceived in the spiritual first.

"If we are able to help the body, in alleviating the burden placed upon the Emunctory System, then the Body, has and possesses, that which is the amazing capacity to revive itself." *- Rui Alexandre Gabirro*

The CARE Principles of the Human Body

Circulation: The free and impaired circulation of Blood, Lymph and nerve impulses.
Assimilation: The intake of Water, Food and Oxygen
Relaxation: The relaxation of the body both Physical and Mental

1. Physical
a) Rest (Body relaxation and period of no work work, either mental or physical)
b) Recreation (Contact with Nature Outdoors)
2. Mental
a) Relaxation of the Mind
b) Times of Quietness

Elimination: The impaired functioning of all the body Emunctories.

Circulation

Daily Body Exercise for Circulation

"Those who exercise, help to maintain muscular vigour. Exercise also stimulates the circulation and arouses lethargic cells so that these may more readily give up unusable waste.

An active, supple body can withstand shock, strain, and disease-building abuse to a degree that would wreck or kill the lazy, slow-moving individual.

Exercise is just as essential as a rational diet. Dependable resistance cannot be attained without it. All people should exercise daily. This assists in the development of self- control and self-discipline, which are so necessary to those who wish to acquire poise and to become masters of self.

Only in the most profound states of enervation or in cases of inflammatory fever, or cardiac depression is positive exercise contraindicated. Moderate tensing of the arms, legs, abdomen, and neck, can be done in bed in the prone position." - Dr George S. Weger, MD in "The Genesis and Control of Disease", 1931.

Assimilation

"In order to have an efficient working organism, we must supply the body with all the necessary ingredients or component parts. But this is not all.

The ingredients must be of proper quality and quantity, and must be supplied in the right proportion.

Every cell in the body has an intelligence of its own through which it exercises the power of:

1. Selection
2. Appropriation
3. Assimilation
4. Rejection

It is our duty to supply the cells of our body, with all the elements it requires." - Dr George S. Weger, MD in "The Genesis and Control of Disease", 1931.

"The newer knowledge of nutrition, embraces in its compass every branch of medicine. Medicine is, in short, the science and art of maintaining health.

And What Is Nutrition?

It is a fundamental function on which the condition of the body - health – depends. It is not merely food or that which nourishes.

Food is the instrument of nourishment; nutrition is the act of using it.

The series of coordinated processes whereby the nourishment of the body is effected.

It consists of the taking in and assimilation through chemical changes - metabolism - of materials with which the tissues of the body are built up, their waste repaired, and their deterioration prevented; by which the processes of the body are regulated and co-ordinated, from which energy is liberated for the internal and external work of the body, and from which heat is generated for the maintenance of its temperature.

A primary purpose of the function of nutrition is, thus, to establish and to sustain the structure and function of all organs and of the body; parts to keep, in short, the mechanism of the body in perfect running order.

And since health, at its best - for it is a variable state of being - is that condition of body in which all its organs are sound and perform their functions duly, easily, and satisfactorily, it follows that a primary purpose of the function of nutrition is to prevent, so far as its limitations permit, that disturbance or impairment of structure or function of organs or of the parts of the body which is disease." - Sir Robert McCarrison, MD, FRCP, in "Nutrition in Health and Disease", British Medical Journal, 26 September 1936.

Relaxation

1. Physical

a) Rest (Body relaxation and period of no work work, either mental or physical).
b) Recreation (Contact with Nature Outdoors).

"Physiological Rest: Ordinarily but little attention is given to this very important form of rest. There is no (bodily) function that is not intimately concerned with the Digestion, Absorption, and Assimilation of Food, and with the Elimination of Waste Products."

"Toxins stimulate (the body) metabolism during the most active stage of elimination. By virtue of the irritating properties of toxins, their release into the circulation causes an increase in the activity of certain glands, especially the liver." - Dr George S. Weger, MD in "The Genesis and Control of Disease", 1931.

2. Mental

a) Relaxation of the Mind
b) Times of Quietness

"Mental Rest: is just as important as physical and physiological rest.

In fact, the greatest amount of wear and tear on the physical organism is due to adverse mental processes and overworked Emotions.

The so-called major Emotions are the most destructive.

To attain a high degree of Mental Rest, then, requires considerable direction, concentration, and application." - Dr George S. Weger, MD, in "The Genesis and Control of Disease", 1931.

Elimination

"The average person thinks of elimination only in terms of bowel movement and kidney activity as primary, and the skin and lungs as secondary.

These 4 avenues represent the gross functions, but the subtle and by far the most important function of elimination has to do with cell and blood purification.

All the tissues that make up the structure of muscles and glands harbour harmful waste products that result from muscular or metabolic activity.

These are the real subtle toxins, the chemical incompatibles and irritants, which the organism is incapable of throwing off effectively while the ordinary kind and amount of food is being taken into the stomach three times a day." - Dr George S. Weger, MD, in "The Genesis and Control of Disease", 1931.

Emunctology

"There are 4 chief eliminating organs. They remove the waste from the body and thus maintain internal cleanliness. If the general care is correct and the body is kept in normal condition the eliminating organs are able to do their work in such a complete way that the blood and all other parts of the body remain clean. **When this is accomplished the individual remains in health.**

The Chief Eliminating Organs are:

1. Colon.
2. Kidneys.
3. Lungs.
4. Skin.

The kidneys will give themselves automatic attention if the drinking is correct.

It is absolutely essential for those who wish to live in health and to maintain the body in a youthful condition and to live long, to keep the body clean within.

Internal cleanliness fundamentally means a pure blood stream.

When the blood is pure the rest of the body is in the same condition." - Dr Rasmus Larssen Alsaker, MD in "Outwitting Old Age", 1926

Definition

The purpose of an Emunctory organ, is to throws off from the body a variety of fluids and solids which are the by products of the digestive functions and which are not needed nor absorbed by the body.

The Emunctories are divided in 2 types:

1. External Emunctory

These are those who are visible and immediate to expel toxaemia from the body.

2. Internal Emunctory

These are supportive in their natural function and will discharge the content of toxaemia within their function into the immediate or external Emunctories.

Emunctories - Organs of Elimination

The Emunctories are organs that help to eliminate.

The Primary Emunctories

The 4 Chief Channels of Elimination:

1. Bowel – Eliminations.

I call the king of all the elimination organs, the bowel. Many people don't realize that having a bowel movement is the most important bodily function. It has been reaffirmed that the body functions as a whole, which requires that each

component part do its work. If any of the 5 main elimination organs functions below par, it places an extra load upon the others in the body's effort to get rid of its metabolic waste material.

2. Kidney, Bladder – Urine.

Kidneys are so important to our internal cleanliness that we have been provided with them in duplicate. We have a 100% reserve in the ability to filter our blood of toxic waste and excess water. A person can lose the complete function of one kidney and still live because the other one, if it is functioning well, has the ability to carry the load alone. Perhaps one kidney can do the job, because the skin acts as a supplemental filter, removing wastes from the blood. The finest way to aid the kidneys is to drink plenty of clean water, eating watermelon will also aid the kidneys in their elimination job.

3. Lungs – Respiration.

The lungs and bronchioles, considered together as part of the respiratory system. Some of the toxic waste material generated in the body is passed out of the system as a gas through the lungs. Carbon dioxide is exchanged for oxygen during the process of breathing. Once again, exercise comes into play as a natural way of increasing elimination.

4. Skin – Perspiration.

The skin is the largest elimination organ. Taking care of the skin and ensuring that it functions well **helps to relieve the other elimination organs.** Skin brushing is suggested as a way of removing dead skin cells and the waste material excreted through perspiring.

Supporting Channel of Elimination

Lymphatic System

A main channel of elimination is the lymphatic system. The lymph has the job of picking up intracellular metabolic waste and dumping it into the bloodstream, where it is then processed by the liver, and filtered by the kidneys.

White blood cells in the lymph also destroy harmful bacteria as part of their function in the body's immune system. **Lymph circulation depends upon movement of the extremities and muscle action.**

That's why most of our lymph nodes are concentrated in the places of greatest movement in the body. They are found where the arms and legs meet the torso and in the neck at the spot where nearly constant movement occurs.

Is it any wonder, then, that **exercise is of the greatest benefit to the lymph.**

Detoxification Organ

The Liver.

"The liver is both a major detoxification organ and a major target organ for toxicity for systemically absorbed chemicals. The liver can metabolically activate chemicals to forms that are hepatotoxic, or toxic to other organs and tissues. The liver can also metabolically inactivate chemicals that might otherwise appear toxic to other tissues." - in "Environmental Health Perspectives", Vol. 106, Supplement 2, April 1998

A Lesson of Cooperation

"It is my experience that many health disorders and diseases begin with problems in the elimination system. No Health Practitioner should practice any system of healing without first considering the 5 main elimination channels: Bowel, Skin, Kidneys, Lymphatic System, Lungs.

The most important of which is the bowel. I have always made it a practice to check the main elimination channels on a patient. Attempting to take care of any symptom in the body without a good elimination system is futile.

The body is a community of many organs working for the good of one another. Without properly functioning elimination organs, the body dies.

The Body is an Organization

The body, it digests food, processes oxygen, and undertakes numerous other activities, and each and every organ contributes in its manner to the body maintenance and its activities.

As human beings, we need every cell, tissue, and organ that was placed into our body. The body is the instrument through which we breath, move and live, and we should treat it with the utmost respect.

We cannot take our body - so wonderfully created - and expect it to function properly if we violate all the natural laws that are necessary for it's wellness."

If metabolic waste cannot be eliminated, and is allowed to accumulate in the body, perhaps suppressed by medical trade drugs or extreme tiredness and fatigue, disease simply walks in.

Bacteria accumulates, germ life develop most often in an underactive bowel.

Gastrointestinal specialists realize that sulfa drugs and antibiotics destroy all bacteria - the friendly bacteria as well as the bad - in the bowel.

The bowel must be considered first in the disease-reversal process.

The source of disease being in the bowel. As we take care of the bowel, we cleanse and purify the body and all its organs.

That cleansing and purifying must start with the bowel.

We must consider the cleansing process in conjunction to the other major elimination channels: the skin, kidneys, lymphatic system, and lungs. The liver also needs to be in good working order because it is a detoxification organ.

We have to make sure we have enough red blood cells.

An anaemic body doesn't have enough energy and doesn't eliminate well.

The whole body must be placed in order.

We must always start with cleansing and making sure that there are no toxic materials being absorbed from the bowel and settling in other organs.

The kidneys are taken care of as the bowel is cleansed. But even so, we must be careful not to give the kidneys too much to do, if they are inherently weak, they will have problems. The consequences could include swollen ankles and increased blood urea and creatinine.

During My Many Years of Sanitarium Work

I have found that taking care of the 5 main elimination systems is the most important thing we can do to gain and maintain health.

Nothing is more important than making sure these 5 systems are working optimally.

Neither all the medicines, nor all the therapies in the world will help much or provide any lasting relief if these systems are not functioning well.

The greatest, and the most abused and neglected, of all of these systems is the bowel." - Dr. Bernard Jensen, DC in "Guide to Better Bowel Care", 1999.

Chapter 6

Disease

"Whatsoever a man soweth, that shall he also reap." Galatians 6:7

"All disease commences with pain, and all pain is the commencement of a disease, and a state of being contrary to nature." - Dr James Morison, MD "Some important advice to the world or, The way to prevent and cure the diseases", London 1825.

"Illness, or ill health, is simply being out of harmony with natural law: the essential law of the universe, which emanated from the mind of the Creator. Sickness is a. product of some violated law of nature, which intelligent,
conscientious, painstaking care might have readily avoided." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, Md., in "The New and Scientific Treatment of Chronic Diseases", 1914.

"When we are able speedily to dissolve obstructions and to re-establish the excretions either in the beginning of diseases or before they commence, we are able also, with great advantage, to prevent very serious evils, and the danger even which threatens life." - Dr Friedrich Hoffmann, MD, First Physician to the King of Prussia, in "Medecine Raisonnee", Vol.5, 1742.

"A disease, however much its cause may be adverse to the human body, is nothing more than an effort of Nature, who strains with might and main to restore the health of the patient, by the elimination of the morbific matter." - Dr Thomas Sydenham, MD, "Sydenham Society", Vol.1, 1848.

"How many diseases can be traced to over-eating! How few to moderation or eating little! When will man, who is capable of reasoning, use that reason?
When will he remove the mist from his eyes, which has shrouded them for so many generations? When he does this he will see that the object of his diet is to keep up a balance between waste and renewal - to give an equilibrium to the system." - Charles Watkins De Lacy Evans, in "Can We Prolong Life? Inquiry Into the Cause of "old Age" and "natural Death," Showing the Diet and Agents Best Adapted for a Lengthened Prolongation of Existence", 1879.

"If the classification of chronic diseases were established on the most successful mode of treatment (the cure of the intestinal disorder), the labours of nosologists (medical authors who occupy themselves with the classification of diseases) would be reduced almost to nothing." - Dr Charles Scudamore, MD, in "Treatise on Gout", 1816.

A Rational Basis for the Study of Disease

"The study of medicine in the future should give more attention to the individual who has the disease, a phase of the subject which has been sadly neglected in the past.

The fact should be emphasized that there is not only a disease which has the patient but a patient who has the disease.

It is necessary to continue study along the lines of pathologic anatomy, bacteriology, serology, and laboratory chemistry; but it is equally important to seek out the means through which **bacteria and other harmful agencies produce the pathologic changes in tissues, secretions, and excretions.**

This we find by studying the normal and pathologic nerve and chemical body controls which result in disturbances in function of body cells and those groups of cells which are called organs." - Dr Francis Marion Pottenger, MD, FACP, in "Symptoms of Visceral Disease, a study of the vegetative nervous system in its relationship to clinical medicine", 1944.

Where the Medical Trade sees a disease, the Emunctologist sees a condition. And conditions are indications of the metabolic or structural state of the body systems, its organs, and in particular, the state of any body part.

Arthritis A Lesson Learned

"How Mrs. Weger was restored to health after having suffered from it for 20 years. For 20 years Mrs. Weger was confined to her bed while suffering from arthritis. Her body had become so rigid from this dread disease that for all those years she was unable to get out of bed.

Dr Weger, her husband, who was a Harvard graduate and also a John Hopkins student was of course in a position to lake advantage of all the help that these 2 schools of medicine had to offer.

He also had a wide knowledge gained from his many years of medical practice in Canada, and Baltimore, Maryland.

But even with the help that medical science in both U.S. and Canada could offer, Mrs. Weger's condition did not improve. After his 20 year search in the U.S. for help for his wife, Dr Weger made plans to take her to Europe, to the hope of finding something more helpful than anything he had been able to find here.

About this time a friend advised them to try Dr. Tilden of Denver, Colorado.

So Dr. and Mrs. Weger went to Denver and after a year and a half under Dr

Tilden care, Mrs. Weger was able to walk. Dr. Weger was so happy over his wife's recovery, and so enthusiastic over the results he saw that he decided to devote the remainder of his life to the study and practice of The Hygienic System.

Both Dr. end Mrs. Weger stayed in Denver, and worked and studied with Dr Tilden for 5 years, before they went to California to open their own Hygienic Institution. Both were so happy that Mrs. Weger was enjoying such wonderful health. Up to a short time ago she lived with her son in Pasadena, and with no return of Arthritis.

These facts were given to me in person by Dr Weger." - Mrs. Grace M. Hopkins, R.N., in letter to Dr. R. G. Wilbom, MD, 25 July 1952.

"Virchow's Theory of the Nature of Disease, and his insistence on the necessity of applying the scientific method to the study of life and man, both reflected and contributed to a habit of thought beginning to obtain dominance in his own time. He reduced disease to what he considered its core of actuality, and it became, in his eyes: A Physical, Chemical, or Anatomical Disturbance of the fundamental units of life - The Cells." - Lelland J. Rather, in "Disease, Life, and Man, Selected Essays by Rudolf Virchow", 1958.

"What we meet with in all diseases is dead blood, stagnant lymph, and albumen in a semi-vital or dead and decomposing condition all through the lymphatics and other parts of the body, brain, lungs, kidneys, liver and fascia." - Dr A. T. Still, MD, DO, in "Philosophy of Osteopathy", 1899.

Inflammation

"There is no abnormal condition of the human system or of its various parts, which calls for the physician's or surgeon's aid so frequently as a condition universally designated Inflammation.

Every organ, every tissue, from centre to circumference, inclusive, inside or outside, this process is liable to invade with grades of danger, ranging from slightly noticed inconvenience and discomfort, to immediately threatening death.

How to meet and successfully avert the ultimate or unrestrained, disastrous, or fatal consequences of this inflammatory process; has been for ages past, and will be for ages to come, the greatest desideratum of the healing art.

What is inflammation?

Today an individual is in perfect health as far as known. You are called in to-morrow and find him with a pneumonia, phrenitis, nephritis, carditis, bronchitis, gastritis or other itis, as you please.

What is its nature? In what, of what, does it essentially consist?

The first noticeable symptom, or changed action of the sanguineous system is of diminished and decreased action. The heart beat is feeble, the arteries reduced in size, the pulse beat known as small and wiry. The starting point, so far as we can observe, appears to be a shock to the nervous system, as manifest by the chill.

The reaction from that is the unnatural and increased performance of the sanguineous system, acting, as acting it must in response to the command of nervous influence and excitement.

The greater of these herculean labours and wonderful experiments have been to show us the manner in which the blood substance departs from the congested capillaries. Blood substance, in health, is always passing out of the capillaries for the nourishment and growth of all the tissues and organs. In inflammation, the only difference is that there is a superfluous amount thrown out, which unappropriated by the process of natural requirement, becomes foreign matter, and an offence to the regular and natural performance of healthy function.

A blister applied to the cutaneous surface will cause the same material to pass through and out from the capillaries.

What do we observe in inflammation?

Lassitude, a sense of uneasiness and discomfort more or less manifest, but the chill or rigour is the emphatic indication of the impending inflammation. In fact, it alone is pathognomonic, positive, and unmistakably certain. In the more violent shocks to the nervous system, from whatever cause, the chill or rigour, may be so severe and desperate as to paralyse the sanguineous system to that extent, that reaction does not follow, and death ensues. In such case it is termed death from shock, whether the cause is injury or traumatism, or idiopathic, as from exposure to cold.

The ability of the sanguineous system in health, to perform its work efficiently, or in disease, to perform curative work, depends upon its supply of nervous energy. If, therefore, by a severance of the nervous system or its paralysis from toxic cause or chill, the tonicity of the heart and arteries ceases, death is inevitable.

Just as certain as that day follows night, is chill followed by an increased activity in the blood circulation, by a sense of increased heat, a more rapid respiration, congestion of the capillaries, exudation of blood substance, with a tendency of the morbid action to some particular vital part or organ. Upon what rule nature makes her selection of organ or region for exudation and possible necrosis, we do not know. Redness, pain, swelling and impaired function give us to understand the part she is selecting or dooming for necrosis.

Possibly the effects of the first shock to the nervous system, upon the Secretory or Emunctory Systems, have been too lightly estimated, for it is certain that from the period of chill the secretions are arrested, as also the Emunctory Function.

These, of themselves, must rapidly produce dangerous if not fatal results if protracted. Our remarks upon the necessity of constant nervous tonic supply of energy to the whole sanguineous system, applies with equal force to the Secretory and Emunctory Systems or Functions. Both the latter must be taken into account in our estimate of the nature of the inflammatory process.

The orderly and healthy performance of natural functions in man, is party governed by the laws of physics and chemistry, and beyond our widest range of observation there is still an unseen power, in constant and efficient operation.

It has been called vital power, vital principle. Our nearest approach to an understanding of these unseen forces or powers, is like the search for infinity.

Here the best men of our profession and race have presented themselves by day and by night, sleeping or waking, waiting, waiting, watching, praying for one glimpse beyond the curtain, the abode of verity, the home of ultimate truth.

Failing in this direction to discover the origin of first causes we fall back upon our own finite and limited resources and forge the phrase “vital”, only another word for the unknown and possibly the unknowable.

The grosser forms of injury to the nervous system that are most common in lighting up the fires of inflammation, we can easily appreciate and understand. But there are other causes or injuries less manifest to our senses and observation, and yet are most potent and powerful to produce the gravest and most formidable forms of inflammation.

A physician need not to practice very many years to become convinced that undue emotions, peculiar to human beings, giving but feeble outward signs, may rack the frame from centre to circumference, dethrone reason, defy all rules, disturb the very soul's repose, and produce the train of symptoms of inflammation, directing the course to the most vital parts, leaving the body partially intact, first robbing it of all that makes life valuable, or existence tolerable.

Inflammation is not a disease per se; it is a natural process for the repair of injury, for the elimination of specific toxic matter that has reached the blood circulation, or it is the penalty and compensation nature demands for an immediately preceding injury or affront to the nervous system. In a state of health there is an equilibrium or equipoise of all the vital functions.

Injury to one disturbs all; is appreciated and resented by all. To acquire, repossess or regain the natural status is alike the business of nature. As in law, punishment may appear enormously in disproportion to the offence.

Waiving the preliminary symptoms of sneezing, increased action of the lachrymal glands, and the stoppage of the secretions, yawning, lassitude and general undefinable discomfort and uneasiness, the first unmistakeable symptom of impending inflammation is the chill or rigour. That is the alarm gun for the coming struggle. The severity and duration of that chill or rigour conveys fair warning of the part the sanguineous system will take in the battle.

The rigour or chill denotes the offence to the nervous system; it is the lighting’s flash, but the heart and arteries will respond in crashing thunder. The former is the gathering of the waters; the later is the roaring flood.

As to the products of unchecked inflammation, and the ultimate consequences of such products, we ought not to disagree, nor in that estimate should we overlook the barricading of the watchful, faithful guardian cells, to protect the system from universal infection and contamination.

My theory and practice is grounded upon a direct attack upon the sanguinary system. The disasters wrought by the inflammatory process, as observed during life, and as revealed by post mortem examination, are referable entirely to undue or excessive natural work of the sanguineous system.

Whatever line of treatment is adopted to prevent dangerous or fatal results from the inflammatory process, should be directed to the prevention of deposit, of whatever abnormal character, by the blood.

There is something prior to the flamma, something that antedates the fever.

Have we not seen cases enough of inflammation from a heated condition to cold, to make it quite certain that such sudden change is as certain to produce febrile or inflammatory action as is hot water or hot iron, or as contact with smallpox, measles, scabies or scarletina, is to produce those disorders." - Dr Harry Hakes, MD in "Transactions of the Luzerne County Medical Society", 1887.

What Is Disease

> ***"Disease is only another word for the disharmony which is generated whenever two unequally constituted bodies of a certain kind interact."*** *- Dr J. E. R. McDonagh, FRCS, in "The Common Cold and Influenza", 1936.*

"It is absolutely necessary to change the commonly accepted point of view.

Treatment of disease as generally applied presupposes that sickness must be combated, relieved, and cured. **If we take for granted that so-called disease must be treated as a foreign invader, a usurper of rights, or an alien enemy, we must continue the vain search for cures.**

Cures as they are misunderstood are in practically every instance merely the palliation or relief of symptoms.

Each separate disease is named according to the location of its most prominent manifestations, plus the systems peculiar to the part involved in the process of:

- Irritation.
- Inflammation.
- Disorganization.

Disease is the warning, and therefore the friend not the enemy of mankind.

It manifests itself in its various ways and forms, from a slight cold to the most severe inflammation (pneumonia), for the sole purpose of ridding the body of accumulated poisons.

One asks:

Should the activity of this process be checked by artificial means or be assisted to more rapid termination? If it is a beneficent process, why not cooperate with it? Why fight it with powerful drugs and the other agencies usually employed to stop nature's effort to heal?

Because people are unwilling to admit responsibility for their own discomforts, they force their doctor to resort to the use of drugs to ease the pain or, by their insistence encourage him to continue his fruitless search for cures.

It is because of an erroneous belief in the cause of disease, a misconception as to what disease really means, that chaos and confusion exist today when order and reason should reign. As long as there is discomfort, there will be doctors to relieve it. We are naturally inclined to be comfortable.

If we are not, we want to be, and we seek relief in the shortest possible time by any measure that will bring it about.

Once relieved, we want to be immediately about our business, which business is usually exactly what made us uncomfortable.

Being creatures of habit, poorly adjusted to our environment, and generally creating or shaping our environment according to the laws of least resistance, we naturally continue to do that which makes us sick.

Lacking in knowledge of health laws and the inclination to reason correctly from cause to effect, we force ourselves out of one discomfort into another.

Each time a crisis is passed, we consider ourselves as having been cured.

Thus we continue to live in false security, continuing our bad habits between and even during all acute exacerbations of an ever present Toxemia, until organic change takes place in one or more of our most abused organs.

Then, instead of having an acute flareup of limited duration, we start down the slide of life, on the path of chronic diseases such as cancer, tuberculosis, diabetes, Bright's disease, pernicious anemia, arteriosclerosis, paralysis, arthritis, heart disease, cirrhosis of the live, or any of the states of disordered health, to that finality known as a complication of diseases.

Once having passed the border line where functional derangement ends and organic change begins, the process of disintegration can at best only be arrested or slowed down. Then nature forces a definite reversal which is more or less intelligently interpreted or realized. By reforming one's life at this time, eliminating all disease-building habits, comfort can be restored in most instances.

Nature can and does tolerate a certain degree of pathology and permits us to live out our expectancy provided that we lighten her burden.

Nature cannot carry the double load of impaired or destroyed function and at the same time hold a depleted nervous system at par and take care of three times as much food as she needs to make up for wear and tear and metabolic activity." - Dr George S. Weger, MD, Weger Health School, in "The Genesis and Control of Disease", 1931.

"The Physical Roots of Disease are: Toxic Accumulation and Vitamin and Mineral Deficiency" - Dr Ulric Williams, MD, "Hospitals and Hooey or Health?", 1941.

The Study of the Nature of Disease

"The Nature of Disease Institute was formed in 1929, with a threefold object in view:

1. To approach disease through the front door of health, instead of through the back door of disease;
2. To make the necessary examinations of the soil, plants, animals and man in order to show, how, why and where, the departure is made from health to disease;
3. To establish a fund for the purpose of carrying out in perpetuity objects 1 and 2, on account of the much-needed light they throw upon the manifestations of disease, especially the acute ones, which go by the names of "mosaic" in plants, "distemper" in animals, and "the common cold" and "influenza" in man.

An initial study of so-called "skin and venereal diseases", showed me that **there is only one disease, that it arises from the protein in the blood being made to deviate from fulfilling its original functions of attracting food, storing it in itself, and radiating the food to the tissues and organs and from the protein being made instead to act as it's host's first line of defence against invaders.**

It also made me realise that what are called "diseases" are no more than its manifestations. Arriving at these conclusions naturally led to my seeking the nature of health, which I found to have its origin in the soil, in the form of micro-organisms, the most important of which are the developmental forms of the cocco-bacillus. These bacteria appear to break down other bacteria, fungi and protozoa, and the "activity" liberated in the process forms the principal ingredient in the food which the protein in the sap of plants attracts.

A deficiency of life in the soil means inferior quality food for the plants; the food cycle in the sap is aberrantly described, and the protein is forced to defend its host against invaders, the first of which turn out to be the very micro-organisms which, in normal circumstances, prepare the food for the plants in the form in which they can best assimilate it.

The very same micro-organisms are to be found not only in the excreta of animals and man, but also to be those whose activity is most closely associated with the manifestations of disease appearing in them when their food is of inferior quality, and especially with the most acute manifestations, which, as already stated, are distemper and the common cold and influenza.

The discovery of the role these micro-organisms play in maintaining the health in the soil, and in producing disease in plants, animals and man, established the relationship that I had always imagined to exist between pedology, agronomy,

veterinary science, and medicine, and made me make daily bacteriological examinations of different soils and the excreta of animals and man, from as many different sources as possible.

Charting the bacteriological results at the end of each year throws a new light upon epidemiology such as has never previously been possible, and the daily collecting of the micro-organisms forms a source of supply of material from which preparations can be made for the purpose of preventing and combating distemper in animals, and the common cold and influenza in man.

The addition of chemical products concludes the list of invaders. **But these seldom act as a cause of disease, except when they are being employed to treat its manifestations.**

The fact has yet to be learnt that treatment of disease is an invader and that it is so must readily be appreciated when it is realised that the aim of treatment, which acts directly upon the protein, is to repair the damage suffered by the protein, and thereby to restore "activity" to its normal course.

More important than the formation of "viruses" (germ metabolic waste) and inclusion bodies by the over-contraction the protein undergoes in disease is the over-expansion to which it subjects the cytoplasm of the cells of the structures in plants, and of the tissues and organs in animals and man, to cause the manifestations. In the cases of animals and man, the manifestation arises in the tissue or organ which originated from the damaged region in the protein; and the lesions which form in the tissue or organ have their origin in the host's second line of defence that is provided by the leucocytes.

The micro-organisms found in the lesions arrive after they have been formed, not before, an order that positively precludes these invaders from being their cause.

Although inferior quality food may be said to be the primary cause of disease, a fact that enables disease in man to be traced back to unhealthy soil, consideration must always be given to the vicissitudes of "climate", which lie in the varying quantity and quality of the cosmic radiation which is continuously bombarding the protein in the sap of plants, and in the blood of animals and man.

The making of daily examinations of the blood, as I have been doing for many years, shows clearly that "climate" is responsible for "activity" describing in the protein diurnal,menstrual, annual, biennial, multiennial, multi-multiennial and other cycles, which profoundly modify the manifestations of disease, and especially the acute ones.

Action of some Therapeutic Preparations

The views which formed the basis of this work are:

1. That disease is a departure from health caused by invaders which are divisible into physical, chemical and microbial agents;
2. That there is only one disease, but several manifestations;

3. That disease is caused by the invaders damaging the protein in the blood, wherein lies the host's main resistance;

4. That the particular manifestation arises in the tissue or organ which originated from, the damaged region of the protein;

5. That the action of treatment, which belongs to the class of invaders, should be to repair this damage.

Health

"Health" is the name given to a state which is characterised by the harmonious exhibition of the three functions of "activity" by the protein in the sap of plants and in the blood of animals and man. The protein first attracts activity from the food, then stores the activity in itself; and finally, it radiates the activity to the structures in plants and to the tissues and organs in animals and man.

This exhibition of the functions of attraction, storing, and radiation is the result of "activity", describing cycles in the protein, in the course of which the protein expands and contracts, or pulsates. The main objects of the protein pulsating are to enable it to attract activity, to fashion it, and to radiate the activity to the structures and tissues and organs in the exact form each one requires for the purpose of executing its particular function, or functions.

The protein is ideally constituted to play this triple role, first because it is of, or one with, the food; and secondly, because it forms the matrix of the structures and tissues and organs. The protein attracts the food it needs in its ray form, rather than in its mass form, as it is generally supposed to do, and the rays need to be related to those of the protein in its ray form in a way that has yet to be accurately defined.

Ignorance prevails also concerning what happens to the rays whilst they are being the rays which are radiated to the structures and the tissues and organs is that the relationship between the former and the latter, in their ray form, is even closer than that which exists between the rays of the food and the protein in its ray form.

The matter of the wave-lengths of the rays enters into these relationships, as does the mass of their wave-packets, about which all too little knowledge exists at present; and that there are other matters concerning these rays of which we have yet no knowledge I feel tolerably certain.

The Never-failing Involvement of the Vegetative Nervous System in Disease

The damage suffered by this system underlies the mal-co-ordination, intestinal toxaemia, and the osteopathic lesions I always picture as forming between them the vicious circle which is so readily demonstrable in every case. The mal-co-ordination results from the over-, and therefore -wrong-, functioning of the cortex of the brain; the intestinal toxaemia from the similar damage suffered by the mid-brain; and the osteopathic lesions by the combination of the two.

It is neither possible to relate the mal-eo-ordination wholly to sympatheticotonia, nor the intestinal toxaemia wholly to the vagotonia, despite the cerebral centre of the sympathetic nervous system being mainly in the cortex of the brain and that of the vagus mainly in the mid-brain because sympathetic and vagus elements are to be found in both these regions of the brain.

What the whole subject boils down to is what I have been trying to emphasise ever since I introduced the pulsation theory: namely, that, owing to expansion and contraction being different expressions of the same "activity" in action, there is no essential difference between them.

The difference is the one man invents to enable him to describe them. And what applies to the protein is equally applicable to the vegetative nervous system.

The central nervous system cannot be similarly divided, because it is more highly evolved, or more condensed, than the vegetative nervous system.

The more highly evolved, or the more condensed, a product becomes, the less divisible are its principle actions, and this is due to its approaching nearer to the unity from which all products sprang originally.

This difference between the two nervous systems shows that "activity" is taking a journey which will end somewhere near where it began." - Dr J.E.R. McDonagh, FRCS, in "The Nature of Disease Institute Second Annual Report", 1949.

The Law Governing the Production of Symptoms

"For we found the law to be that the vast majority of the symptoms of disease are disturbances of normal reflexes.

I know quite well that no one who reads this will accept at present the view that this theory will do for clinical medicine what the atomic theory did for chemistry, but I know equally well that when the method of applying it is understood its significance, will be appreciated, and it will have a very far-reaching influence on the progress of medicine.

Multiple Reflexes

During ill health the patient may, complain of a number of symptoms, and the doctor may detect a number of signs. This is due to the fact that the agent which causes ill health disturbs a great many reflexes.

To look at these signs and symptoms, each one recorded as an isolated fact, presents such a confused picture that a coherent description of the patient's condition cannot be given." - Sir James Mackenzie, MD, FRS, in "The British Medical Journal", 29 January 1921.

"Each generation of students in medicine, as in other sciences, has to make its own experience. Positive knowledge we may derive from the store created by our intellectual ancestors; but the application of this knowledge, the proof of it, lies with ourselves. In our purposeful testing of truth we are prone to error.

Experience is the name we give to our mistakes.

After I had learnt by experience of this plain association of disordered mental conditions, of "Functional Psychoses", with Visceral Disease I discovered that a century ago the same views had been held and taught by Abernethy in England and by Pinel in France.

Chalmers Watson, himself a pioneer in this branch of inquiry, quotes Pinel as saying in 1809:

> *"It seems that the primitive seat of insanity generally is the region of the stomach and intestines, and it is from that centre that the disorder of intelligence propagates itself as by a species of irradiation."*

- Sir Berkeley Moynihan, Br, MS, President of the Royal College of Surgeons of England, in "The British Medical Journal", 5 March 1927.

The Totality Of Any Disease, Is The Totality Of The Morbid Action

"All natural forces are based upon law. Nothing can be known of the disease save through the phenomena known as symptoms; these are evident to our observation and senses and must be recognized.

These phenomenal represent the individuality of the disease in the only way in which we can recognize it.

The number of parts of human body susceptible of receiving the curative action of drugs vastly outnumbers those recognized in the anatomy, because, disease and cure do not lie in the tissues except as a reflection of the man himself.

There is an almost infinite number of parts or cells in each organ, and this vast number are suffering together, some more or some less; the affection of each elements may be different from that of any other, the aggregate affection composing the disease of that tissue of that one organ.

How much more complicated is the disease of the whole body, even though that manifestation be classed as a "Local Disease"!

One organ cannot suffer along any more than one cell can suffer by itself.

Every disease affect in some way and to some degree every organ, every tissue, every molecule.

Because of custom we express ourselves in this sense as from the greater toward the smaller, from without inward, yet an analytical study must remind us that the disease manifestation is an exfoliation, an outward manifestation of an inward turmoil, that is not found in the most minute examination known to man of any cell or portion of the human frame.

We may find disease manifestations, but we cannot find disease itself.

The totality of any disease is the totality of the morbid action, sensations and

manifestations; and true and complete and comprehensive law of therapeutics must recognize all the morbid phenomena and show some relation between them and the curative agent. This relationship must be direct and clear." - Dr H. A. Roberts, in "Principles and Art and Cure", 1942.

Medical Observations Concerning the History and Cure of Acute Diseases

On Acute Diseases in General

"1. As far as I am capable of a judgment, the dictates of reason are as follows, namely, that a disease, however much its cause may be adverse to the human body, is nothing more than an effort of Nature, who strives with might and main to restore the health of the patient by the elimination of the morbific matter. For, since it is the will of God, the Supreme Arbiter and Regulator of all things, that the human frame be, by nature, adapted to the reception of impressions from without, it follows that it must also be liable to a variety of maladies. These arise partly from the particles of the atmosphere, partly from the different fermentations and putrefactions of the humours. The first insinuate themselves amongst the juices of the body, disagree with them, mix themselves up with the blood; and, finally, taint the whole frame with the contagion of disease. The second are confined within the body longer than they ought to be, its powers having proved incompetent, first to their digestion, afterwards to their excretion. This may arise from either their bulk, or the incongruity of their qualities.

2. Such are the conditions complicating and interwoven with the very essence of humanity, and that so closely that no one can succeed in wholly making himself independent of them. Hence Nature, in the concatenation of symptoms, has provided a method for the elimination and exclusion of the peccant and foreign matter, which, otherwise, would undo the whole fabric of our frame; and infinitely oftener than we find to be the case would she gain her end, and attain the restoration that she aims at in these ungrateful remedies, if she were not diverted by ignorant men from the straight way that, of herself, she holdeth.

3. Now, just for the sake of proving the truth of the above-made statement by one or two examples, let us ask what is the nature of plague? Is it aught else than a complication of symptoms which Nature puts in play, in order that, through the natural eliminations, either in the way of abscesses, or by the help of some other form of eruption, she may expel from the body those infectious particles that we have taken in along with the air that we breathe? And what is gout? It is a provision of Nature to purify the blood of old men, and to purge the deep parts of the body. Such, at least, is the language of Hippocrates. The same may be said of all other diseases, fully formed.

4. This undertaking Nature performs at different rates; quickly or slowly, according to the different processes by which she strives to expel the morbid influence. As often as she calls in the aid of fevers for the isolation of the tainted particles from the remainder of the blood; and when, by a further process, either by diaphoresis or diarrhoea, by eruptions, or some other evacuation, she expels the particles thus isolate; and when whatsoever is done at all is done amidst the subtile and spirituous constituents of the volume of the blood, and that with a corresponding disturbance; when this, I say, takes place, it becomes a matter of absolute necessity, not only that the recovery or death of the patient be determined with rapidity, but that grave and terrible symptoms be associated with such an effort of Nature; for she is trying her strength, and must either expel the mischief by a crisis, or herself faint in the struggle. This is the sort to which the diseases which we called acute belong, since it is with rapidity, with commotion, and with danger, that they advance to their proper status. To speak, however, with less precision, but with equal truth, those diseases also are to be considered acute which, although, in regard to the whole of their paroxysms, taken collectively, they may be said to move slowly, yet in respect to any particular paroxysm, have a rapid progress, and terminate quickly in a crisis. Such are all intermittent fevers.

5. Occasionally, however, the parts that contain the disease are, by their nature, incompetent to determine a fever towards them, and, so, unable to effect a full separation of the morbific matter. Occasionally, also, it fastens upon a part wholly unable to get rid of it at all; and this may arise either from the particular conformation of the part itself, as is the case with the morbid matter impacted in the nerves of paralytics, and with the pus in the cavities of a thoracic empyema, or else from a deficiency of the natural heat and animal spirits, as is the case with the phlegm falling upon the lungs of old men worn with coughs. Lastly, it may be referred to a continuous afflux of new matter. By this the blood becomes vitiated; and, from its excessive disposition to eliminate the same, distresses and overwhelms the parts. Now, in all these cases, the morbific matter either never attains its proper coction at all, or else attains it slowly, and the diseases which originate therein are properly called chronic diseases. Classified, therefore, according to the two opposing principles mentioned above, diseases fall into the two classes of acute and chronic." - "The works of Thomas Sydenham, MD", 1848.

Note: Dr Thomas Sydenham, MD (1624-1689), studied medicine at the University of Oxford, and was the author of "Observationes Medicae", the standard textbook of medicine for 2 centuries, he is recognized as a founder of clinical medicine, epidemiology and as the father of English medicine, or the "English Hippocrates".

The Difference Between Health, Health Conditions and Disease

Health

Health is a state of wellness, both physical and mental. In other words Health is the state of body and mind free from any Health Conditions.

Health Conditions

Health conditions commonly referred to as diseases have 3 stages:

Stage 1 - Acute Health Conditions

Referred to as an Acute Health Conditions: this stage is characterised by the presence of discomfort either in the body, mind or both.

All Acute Health Conditions can be treated and resolved.

"Most Acute Illnesses are Nature's (God's) method of ridding our systems of waste, which would otherwise cause disease.

They are "house-cleanings", "healing crises", preventing collection of dangerous dirt.

They are Nature's protecting reactions against existing disease. But for Acute Illnesses, the human race would have ceased to exist long ages ago. Suppression of such protective reactions, however seemingly adroit, is, usually, the height of unwisdom. **A big proportion of chronic disease is a direct result of suppression of Acute Illnesses. Yet the one really impressive achievement of Medical Trade "Science", is the increasingly effective suppression of acute illnesses.**

Believing these Illnesses caused by the "germs", Medical Trade Medicine kills millions of germs, and almost as many men.

Abolishing symptoms which are Nature's warnings, or (worse still) evidences of her efforts to heal, without adequate measures to deal with their cause, is merely preventing Nature from achieving her beneficent purpose of protecting us from the consequences of error or sin." - Dr Ulric Williams, MD, "Hospitals and Hooey or Health?", 1941.

Stage 2 - Chronic Health Conditions

Referred to as a Chronic Health Conditions: These are an aggravated Acute Health Condition which was left unattended, allowed to grow in its symptoms. Thus becoming more predominant in the body system.

All Chronic Health Conditions can be treated and resolved.

The following applies to the majority of organic in origin Chronic Health Conditions:

"The Source of Chronical Diseases must necessarily begin at the Stomach and Guts. This certain, however, that the free and full flowing of this Evacuation, is as necessary to Health as any of the grosser, since in Quantity it is at least equal to both the aforementioned; and an Obstruction thereof, is generally the Source of all Acute Diseases, as it is a Consequence of all Chronical ones." - Dr George Cheyne, MD, FRS, in "An essay on Health and Long Life", 1724.

Stage 3 - Disease

A Disease is a Chronic Health Condition which was left untreated, certain conditions left untreated may become a trigger and give rise to the formation of a malignant type of growth, thus allowed to evolve into (as if) a foreign entity within the body system. In other words diseases are Chronic Health Conditions (Illnesses) that are out of control from the body immune system, and act as if, it has become another organism within the body. Advanced cases of malignant disease states it I probable that can only be removed from the body in 2 ways, either by prayer to The Lord Christ Who Is God, or by surgery.

Thus it is crucial that each individual take responsibility of its body and care for the preservation of its health, by not overtaxing same. And be mindful of its workings, needs and treatment.

Causes of Disease

Health Conditions are not diseases, they are clear states of either: Intoxication, or Lack of Nutrients, or Dysfunctional States of the Muscular Skeleton System. From Either any or all of these.

Not forgetting in certain conditions, that **Life if a Continuation.**

Therefore, there are no incurable Health Conditions as long as we can detoxify the bloodstream, and rectify the muscular skeleton system.

In our body there are several system networks, such as the blood, lymph and nervous system if there is any impediment, or affection causing numbness or inflammation to any given part of any of these systems either by organic or functional origin, the body organs will by consequence be affected in its normal physiology thus giving rise to pathology.

"Disease is caused, primarily, through accumulations of toxic matter which clog the vital organs, interfere with nutrition, retard elimination, *and eventually cause what might be termed a healing crisis on the part of the body.* ***Hence colds, fevers and other disorders to which we are subject are really vital eliminative efforts on the part of the organism to throw off disease matter and to free the mechanism of the body from that which hinders its smooth working."*** *- Dr Eric Frederick William Powell, DO, in "Water Treatments", 1929.*

Diseases Are Rather Condition

By now the Emunctologist should known that Diseases are rather Conditions: or States of Toxicity; or Nutrient Deficiencies, the lack of Vitamins and minerals which are essential nutrients that the body needs in order to work properly; or misalignment of the body, or any one of these. Not forgetting that Certain conditions, are an action of that: Life Is A Continuation. The symptoms which the medical trade calls diseases, reflect the state of metabolic burden, or physical injury, in which the body at a present given moment encounters itself.

Remove this toxic burden, and give the correcting physical adjustments to the body and health and happiness returns. If the causes which lead the body to that state are not committed again, either by indiscretion in diet, improper living or avoiding accidents and injuries. Thus there are no heart, brain, liver or colon diseases as these so-called diseases are metabolic in origin.

The 3 Main Factors in the Origin of Health Conditions

1. Organic: substances that where allowed to enter the body either internally or externally.

a) Nutritional Metabolism: More than **80% of Health Conditions have either their origin, or are aggravated by the Gastrointestinal Tract, these than affect glandular in-coordination (Toxaemia). Other conditions are the result of Lack of Nutrients (Good fresh wholesome food).**

Hydropathy aims at eliminate Toxaemia from the body.

Some prenatal conditions are organic in nature, these arise both from the lack of nutrients, and are affected by the state of the metabolism of the host body.

2. Functional or Structural: Impact upon the anatomical structure of the musculoskeletal system, these create subluxations along the spine, where the nerves exit, causing interference to the nervous system at any point, leading to the improper functioning of various parts of the body.

a) Subluxations Along the Spine: The brain and spinal cord make up the central nervous system. **The nervous system coordinates and controls every function of the human body. The spinal cord carries sensory impulses to the brain and motor impulses from the brain. The spinal cord also controls stretch reflexes, bowel and bladder control, 31 pairs of nerves exit from the spinal cord and innervate our body and limbs. The spinal cord also acts as a nerve centre between the brain and the rest of our body. The correcting or and adjustment of a subluxation by means of Chiropractic Adjustments aiming to eliminate subluxations along the spine.**

b) Strain Upon the Muscles: Osteopathic Manipulation to alleviate strain upon the muscles.

c) Spinal Nerves: A spinal nerve is any of the 31 pairs of nerves that arise from the spinal cord. The spinal nerves correspond to where it emerges and passes through the spinal vertebrae: there are 8 cervical (neck), 12 thoracic (chest), 5 lumbar (lower back), 5 sacral (sacrum bone) and one coccygeal (tailbone) nerve(s).

Each spinal nerve is attached to the spinal cord by 2 roots: a dorsal or posterior sensory root and a ventral or anterior motor root. The fibers of the sensory root carry sensory impulses to the spinal cord, pain, temperature, touch and position sense (proprioception), from tendons, joints and body surfaces. The motor roots carry impulses from the spinal cord. The spinal nerves exit the spinal cord and pass through the intervertebral foramen, then divides into 4 branches.

In this regards, it is important to note that all conditions of the functional type start to develop, and may originate from the very first moment of the act of birth, where there might be injury to the spinal cord, from complicated or difficult births.

3. Mental / Spiritual: Influence of the mind by its thoughts, ideals, attitudes and actions, this have an effect upon the nervous system and its actions upon the fascia, and an effect upon the glands, by which they have an effect in consequence upon the internal organs of the body. To be sure, these influences from the mental/spiritual can have either a positive or negative influence in upon the systems of the body. In accordance if the same actions are of a positive, constructive in origin or of a negative and destructive kind. The choice is ever present in each individual, which shall he chose. “For what a man sow, so must he reap.” This is an immortal truth, and a constant one in a 3 dimensional world.

a) Emotions: Certain extreme emotions, have both a direct, and an indirect effect upon the functioning of the internal organs.

This can disturb digestion, the circulation system, and affect the otherwise normal workings of the Emunctory System, and in particular that of the gastrointestinal tract, with greater consequence being felt in the large colon.

In summary then: These 3 main factors cause discomfort by their; influence, impact, or entering the body, thus their permanence if not treated or rectified, will inevitably lead in progression (development) into acute disease, these then to be settled (like in) a permanent manner in the human constitution.

Leading the individual to think that once he has that “disease”, he no longer can get rid of it. This is of-course a Medical Trade Fallacy, and must be eradicated from the educated mind.

The 5 Main Factors in the Causation of Health Conditions

Once discomfort is allowed to settle for a certain period of time that which we call disease then starts to take up its manifestation in the body, in its acute form, before gradually over time becoming a chronic condition to the body, thus more difficult to remove, or cleanse the same from the body.

What we call Health Conditions has its principal causation or aggravation on the following 5 main factors, which when the body is exposed to same, cause **Cellular Dysfunction to the body, and may cause Trauma to Mind and vice versa.**

Cellular Dysfunction, Trauma or Health Conditions are caused by:

1. Malnutrition. Which include: wrong foods; improper acid, alkaline balance; too much food; lack of food and nutrients, vitamins and minerals; low intake of water. Metabolism from bad foods choices, together with improper eliminations produces in the long term organic disease.

2. Exposure to Toxins (either internal or external). From inappropriate food-stuffs, either in wrong combination with others, or prepared in a detrimental manner to the body organism either digestion and or absorption; toxicity from the medical trade drugs so-called medication, including vaccines; toxicity from external pollutants. Including the taking of antibiotics which destroy and cause injury to the body micro-biome, which is essential to live and good health.

3. Physical Accident. Causing injury or trauma upon any bone tissue, and, or, soft tissue of the body. Thus producing physical malfunction in the body.

4. Mental and Spiritual State. Which include: ones ideas and ideals; attitude; fear; lack of community involvement and participation; the state of relation between self with the Creator. Thus emotions and attitude, emanate from the; mental, spiritual, and psychological forces of the body. Then the connection between the soul and the physical body is made through the glands, these are those in which the etheric body is very closely knit with the physical body, then the ability (and also the effect) to produces endogenous chemicals, secretions such as hormones, neurotransmitters. These then, are able by their action upon the blood stream to produce chemical changes in the body, of which, the most visibly, and noticeable are those of the glands and the nervous system. These are indicative that the body has a mental, spiritual and physiologic aspect.

5. Exercise. Which includes: Lack of movement, or too much movement; lack of enough contact with the outdoors, nature (intake of oxygen and sunlight);

These are the 5 main factors in the causation of Health Conditions: either on their own, or in a combination of one or more.

Thus, then these constitute not all the causes, but the 5 main factors, in which at least 1 is present, for any conditions to exist. Other factors may exist, and do exist, which can bring a burden to the system (but those are the lesser factors), these then as listed, are the 5 main factors in the causation of Health Conditions.

How can we overcome Health Conditions

Through diet and physical exercise the majority of health conditions, can be overcome. These can be achieved, as long the right mental attitude is kept and maintained.

Microzyma

"These microorganisms (germs) feed upon the poisonous material which they find in the sick organism and prepare it for excretion. These tiny organisms are derived from still tinier organisms called microzyma. These microzyma are present in the tissues and blood of all living organisms where they remain normally quiescent and harmless.

When the welfare of the human body is threatened by the presence of potentially harmful material, a transmutation takes place.

The microzyma changes into a bacterium which immediately goes to work to rid the body of this harmful material. **When the bacteria have completed their task of consuming the harmful material they automatically revert to the microzyma stage."** – Dr. Prof. Pierre Jacques Antoine Béchamp, MD quoted in "Vaccination The "Hidden" Facts", Ian Sinclair, 1993.

> ***"Dr M. L. Leverson, MD an American physician goes on to describe disease as nature's attempt to eliminate waste,*** *and diseased tissues as being due to improper living; and suggests plenty of fresh air, the best of sanitation, very scanty clothes such as gymnasium costumes for everyday use, and a scientific study of diet;* ***he believes overeating causes "an enormous number of diseased conditions". "*** *- Ethel Douglas Hume in "Béchamp or Pasteur, A Lost Chapter in the History of Biology", 1932.*

"Pent-up secretions, excretions, septic matter, or pus cause enough nervous irritation to bring on elevation of temperature and acceleration of pulse; but in time the reactive forces of nature become so blunted that acute symptoms no longer obtain. **The organism may be so abused and enervated that there is no power left for a reaction sufficient to get rid of Sepsis or Toxemia.**

Then it is that we have Chronic Disease, Chronic Toxemia, with a giving-way of one or more organs of the body.

The most vulnerable organ or organs give down.

Thus we may have tuberculosis, bronchitis, Bright's disease, colitis, gastritis, or disease of any other organ. **The treatment, first, last, and all the time, must be with a view to getting rid of the Toxemia.**

This consists in correcting whatever habits of life are producing enervation, and then gradually building up a normal digestion, assimilation, and elimination.

No treatment can be farther from the purpose than the plan advocated by modern Medical Science; namely, giving drugs for relief, which further inhibit elimination and feeding beyond digestive and eliminative capacity.

We are taught by the very latest development in the "Medical Science" that germs cause disease. This is untenable to the analytical, minded physician, because, if germs are not omnipresent, their evolvement, is imminent and waits, only upon the coalition of the proper environment and elements necessary for their genesis. If the former, if omnipresent, they are not specific at all times." - Dr John Tilden, MD

The Fallacy of the Germ Theory on Disease

There are 4 major types of Germs:

1. Bacteria
2. "Viruses" (germs metabolic waste)
3. Fungi
4. Protozoa

Only the untutored and the unaware may fall for the "germ theory paranoia" easily, after all it is a $45 Billion Dollar Industry, as per 2018.

Germs have co-existed with both man, animals, plants, and everything that lives in the water, soil and air from the very beginning of life creation in the physical world, in fact germs where the first ever forms of life created in this planet. Germs as it is known are in their majority beneficial, some (small percentage) may if the conditions appropriated, allow to exist - for it - then these few pathogenic germs may cause havoc under favourable conditions.

Thus the conditions where ever they may be either soil, air, water or body must be kept in their optimal state, as close to what nature, the Forces of Creation intended to, in other words in a state of wellness, cleanliness and nutritional balance.

In regards to cleanliness one must know the difference between healthy dirt and unhealthy dirt, so supposing the individual is enjoying a day out with nature, contact with healthy soil is good, it may be called dirt but it is clean dirt, and this clean dirt is beneficial.

Germs are essential to life, without germs life in planet earth would simply not be possible to exist.

The Emunctologist will know, the procedure to relate to the germ balance in the body, and how to prevent and treat pathogenic germs overgrowth.

If the conditions on the blood and lymphatic circulation are kept clean, and the body correctly nourished, germs of any kind cannot injure the physical body.

Thus the attention to the importance of both cleanliness of the body at the cellular level, and the nourishment of the body at the cellular level, in other words the importance of the correct application of Hydropathy in one part and the attention to the correct nutrient content in food selection and combination of same which inevitably will become the source of nutrition and energy at the cellular level.

Natural Defences of the Body Against Disease

"We are continually in the presence of disease germs; the food we eat or the water we drink may contain pathological disease germs; almost daily we are exposed to contagious or infectious diseases, yet only a small percentage of the persons exposed contract disease. At this time it may be of interest to study why we do not all contract diseases with which we come in contact.

For a clear understanding of how the body in health is able to protect itself and ward off the causal agents of disease, we must first understand what we mean by disease and then consider what methods of natural defence the body possesses.

Life is an Expression of Function

When there is perfect correlation of the functions of the body and when there is perfect equilibrium of the organism with its environment, the body may be said to be in a state of health. Any disturbance of such equilibrium, hence any departure from the normal in structure or function, is a state of disease.

There are many causes which disturb the equilibrium of the organism, but the effects or reactions of the organism to the cause are few in number.

To combat the disturbances of equilibrium, the body is protected by natural defences. The severity of the disease is determined, not only, by the intensity of the cause, but by the state of the organism and its power of defence.

So, to restore an organism to a state of perfect equilibrium, we must determine, not only the cause of the ailment, but the degree of health of the organism and the degree of reaction or the defences it has with which to combat the causal agents.

Certain of these defences are used by every organism to maintain normal life; the others are called forth, or the normal defences are exaggerated to defend the body against the causes which upset the equilibrium and produce diseased states.

The first general biological law or general attribute of living matter is that of self-preservation. The first biological acts of living protoplasm are, therefore, nutritional. In order to obtain food and to remove itself from dangerous environmental conditions, motion becomes necessary, and is the next quality that obtains in matter. These, we are taught, are the primary attributes of life.

For perfect health there must be complete appropriation, assimilation, and elimination.

The life of an organism must not be disturbed by unusual internal or external agencies. It must proceed from birth to its highest development of structure and function

by a process of evolution. Agencies from within and without disturb the equilibrium. In consequence, on the one hand, there may be immediate death or, on the other hand, disease, resulting in death or in continuous disturbances of the processes of life, as in chronic disease. The environmental agencies which tend to cut life short, or to excite disease and thus cause suffering are met by reactions in the organism which bring about an adjustment of the disturbed equilibrium.

By this reaction the organism protects itself, it expels, destroys, neutralizes or antagonizes the agent. Biology teaches the various modes of defence that living protoplasm, throughout all its variations, possesses.

Preservation of life is the inevitable result of natural law.

In man, to the stimulus of instinct is added that of reason. The various agents which aim to destroy human life or bring about the state known as disease, are met by an augmentation of those modes of defence which are present in health.

They become, when there is loss of equilibrium, as in disease, the strongest means the organism can possess for self-preservation.

An increase of cellular activity, in metabolism, brings about fever, one of the most important means of defence. This same nutritional and assimilative act causes an increase of the white cells of the blood, leucocytosis, another mode of defence of the organism. The increased nutritional processes stimulate secretory activity and thereby multiply the abundant resources of the organism.

In consequence there arise to an increased degree the chemical processes which are essential to the defence of the organism. **Insult of the nervous system causes pain**, another mode of defence. Motor insults seen in spasm, whether of voluntary or involuntary muscles, resulting in vomiting, diarrhoea, cough, spasm of the muscles of the eye, spasm and resistance of the muscles of the body, are modes of defence, an exaggeration of the normal physio logical acts. Fatigue is a very common and pronounced expression of disease. The agencies which have disturbed the equilibrium and produced a departure from the normal in structure may have been met by well organized defence. The result may be recovery, destruction of the part, or death of the individual. The result of defence, when local, as in inflammation, may be not resolution, but a continuation of the process, terminating in deformity, causing, in the case of tubes or channels, an obstruction, or in the internal organs, degenerations or an overgrowth of fibrous tissue.

Under such circumstances we find evidence of secondary defence, that is, attempts to approximate the normal equilibrium by the adaptation of the organism to morphological changes. This is seen in the establishment of collateral circulation after vascular obstruction, in the occurrence of enlargement of the heart as the result of valvular lesion, or in overgrowth of kidney tissue (hyperplasia) when the opposite kidney has been destroyed.

The effect of adaptation brings about what is known as compensation or adjustment. One of the most effective agencies for adaptation, as well as defence, is the overwhelming provision against loss that is furnished by paired organs and by the multiplicity, far beyond the normal needs of the Organism, of the cells furnishing the products of gland secretion.

Nature defends herself against the various morphological disorders by expelling a new growth or a foreign body; by surrounding the latter with inflammatory products which render its presence innocuous; by overcoming obstruction through enlargement of the part or organ (hypertrophy); and by the formation of collateral circulation.

The effort to remove calculi (gallstones, kidney stones, etc.), the vomiting of undigested food, the discharge of foreign bodies from the intestinal canal by diarrhoea, from the eye by a flood of tears, from the nose by sneezing, and from the throat and limiting lungs by coughing, are defensive acts.

In functional disorders and in fatigue, the methods unconsciously resorted to by the organism to bring about repair are rest or exercise, sunlight, fresh air, tonic environmental conditions, and the adaptation of duties to the actual powers of the organism, such as limiting a physiological act, like digestion, to its capacity.

Thus far we are unfamiliar with specific defensive agencies against alcohol, tobacco, black tea and allied materials. The only suggestion of defence, according to Musser, in these instances, is that of toleration for a time against their action, but sooner or later toleration ceases. The creation of immunity is the greatest defence of the organism against infection.

In immunity there are formed substances which are retained in the blood and tissues and have the power of destroying or rendering innocuous the poisons from the germs of infectious diseases. This immunity may be natural or acquired and may be either active or passive, depending upon whether it is produced by the organism or introduced artificially. Withstanding infections depends upon the defences which are possessed by the individual against each causal agent.

It is impossible to prevent the entrance of bacteria into the digestive tract with our food. Against this invasion the normal human individual is protected by the acidity of the secretions of the stomach.

The body is protected against the poisonous substances formed in the intestinal tract by the secretions, the influence of the lining membrane of the intestine, the liver, which alone destroys 2/3 of the poisons, and by the various glands throughout the body which have the power of destroying toxic substances and also by the organs which aid in their elimination.

In the respiratory tract we have a series of defences against the invasion of foreign bodies or of disease germs. The vibrissae or large hairs at the entrance, the cilia or hairlike processes of the lining cells of the respiratory tract, whose wavelike motion is always toward the exterior, constitute a mechanical line of defence. The excretion of mucus and the act of coughing caused by the irritation of the invading agents constitute another line of defence.

Tissue resistance is a strong method of defence.

The foreign particles which were able to pass this line of defence are deposited at the base of the lungs in lymph nodes and a smaller amount in the tissues themselves.

By their mechanical presence they irritate and lower the resistance and make the soil more favourable for the development of tuberculous and other lesions.

The most probable reason why acute colds are so prevalent during the late fall or early spring, is because the atmospheric conditions are then most favourable for a reduction of the line of defences, and because the greater number of people are unprepared, or neglect the necessary hygienic rules as to clothing,

diet, and the heating of their homes, thus rendering themselves susceptible to the action of these altered atmospheric conditions.

Contagious diseases are more prevalent at this time because they find easy footing when the soil is prepared by inflammatory or catarrhal disturbances of the lining membranes of the respiratory tract. In bronchitis the reactions are seen by the fever, leucocytosis, inflammation, increased secretion of the lining membrane, and cough. Here the cough is a defensive act which should not be suppressed.

The fact that pneumonia and many other diseases are self limiting is sufficient evidence of the presence of a natural defence of the body against disease.

In fact, the whole process of pneumonia and pleurisy must be regarded as a manifestation of the natural defences possessed by the organism.

Under ordinary circumstances and with moderate care in our manner of living the natural defences of the body are sufficient to combat and ward off all offending causes of disease, yet 1/7 of the human race die of tuberculosis.

A large proportion of the individuals, however, become infected before reaching adult life and never have the disease. Almost every body which comes to autopsy shows healed tuberculous lesions. The tuberculin tests show that over 90% of children are infected before reaching the 12% year of life. This means that only in a very small proportion of those upon whom the seed falls is the soil suitable for active growth, only a natural immunity keeps the race alive (Osler).

The adult human individual in normal health seems to be practically immune to natural infections, but where the cause is overwhelming or where we, by abuse, reduce our power of defence, infective agencies are able to enter the system and devastate our tissues.

We cannot withstand disease unless our defences are kept sufficient.

Defences will not be sufficient unless we secure the proper kind, quality, and quantity of food, the proper amount of fresh air, rest, sleep, and exercise.

If the defences are still insufficient they must be augmented. It will thus be seen, in accordance with natural law, that the organism is supplied with powers of nutrition which induce resistance, which enable it to protect itself by the destruction, by the counter action, and by the elimination of deleterious agents, and thus by adaptation provide for the re-establishment of the disturbed equilibrium. Unfortunately, nutritional, resistant, defensive, and adaptive powers may, for various reasons, not accomplish their purpose. The physician must then determine the deficiencies and aberrations and supply means to aid the organism.

Failure of the defences of the organism against disease takes place because of the overwhelming action, quantitative or qualitative, of the causal agency.

It may also be due to de creased resistance of the organism. Usually the defensive properties are sufficient, provided the organism is in perfect health.

In such state, in response to the irritant, the normal forces of the organism are increased; they are distributed rapidly, where needed; the reserve force is sufficient to meet the emergency, or an abundance of new forces is created.

On the other hand, the organism may be handicapped by weakness, congenital or acquired, morphological or functional, by previous disease, or by the environmental conditions.

We aid Nature in her defence against the anatomical expression of disease by regulating the entire life of the organism so as to bring about an adjustment of function or complete adaptation. The daily life must be made to conform with the anatomical departure." - Dr Charles Clyde Sutter, MD in "New York Medical Journal", 21 February 1914.

Migrainic Psychoses

"The most recent researches in the domain of physiologic chemistry lead to the view that migraine finds its logical explanation in a pathologic metabolism and that the immediate cause of a migrainic attack lies in auto-intoxication.

Whether it is uric acid, as championed by Haig, or special ferment or ptomain, as advocated by Friesser. The fact is, that in the majority of cases, if not in all, there is an element of gastrointestinal disorder.

A priori one can say than an attack of migraine suggests a cerebral poisoning.

The headache and other cerebral symptoms observed in a migrainic attack are analogous to the same symptoms in diseases of the meninges and tumors of the brain. It is possible that in migraine the primary cause is of a cerebral nature and the digestive disturbances are brought on by the condition of the brain.

Practically speaking, there is a vicious circle in regard to the relation of brain and gastrointestinal tract and migraine.

Abundant material concerning mental disturbances in endogenous and exogenous intoxications is now on record.

The studies of: Indol, Indoxyl, Indican, Skatol, Acetone in their relation to certain psychoses are too well known to dwell on. Interesting and instructive are the studies of Richardson (Bull, of Labor, of Mt. Hope Retreat, 1899), who made exact quantitative estimation of indol in various mental and nervous disorders.

The conception of autointoxication is so far advanced that a number of diseases can be readily explained on this basis. Suffice it to mention, mental disturbances following infectious diseases or puerperal states, to see that a toxemia is the immediate causative factor of the cerebral derangement. In this connection it is interesting to call attention to the observations on variation of leucocytosis. When leucocytosis is artificially stimulated (which is Nature's method of combating toxins) there is an improvement in the patient's condition.

Among all the organs which are capable of becoming the seat of endogenous intoxication, the gastrointestinal tract is the most important.

It is the "fons et origo" (source and origin) of various toxins. Observation shows that there is a great analogy between the cerebral manifestations in intoxications of endogenous or exogenous sources.

While in one group of cases there is depression, in another there is exaltation and restlessness. These 2 states may alternate, succeed each other rapidly, and may be accompanied by hallucinations.

The multiple mental phenomena observable in such cases can be summarized in 3 forms:

1. Confusion
2. Delirium
3. Stupor

The first 2 are associated very frequently to a various degree.

In migraine, which is so intimately associated with disordered metabolic changes, mental disorders are also observable. When the latter occur, they are undoubtedly occasioned by the same obnoxious metabolic product as the migraine itself.

That this is mathematically correct can be seen from the fact that both morbid processes appear and cease almost simultaneously. **Association of migrainic and mental symptoms is not at all surprising.**

The same toxic product originated in those arthritic, gouty, obese and constipated individuals, by circulating in the blood, will in certain cases produce meningeal and bulbar symptoms (headache and vomiting) plus mental disturbances. It is true that the mental symptoms are not frequent, but close observation will show that they are always present although in a mild form; in every case of typical migraine there is some degree of mental dulness, apathy and confusion and, not infrequently, mild delirium. Within the last 4 years I have succeeded in collecting 12 personal cases of typical psychoses observed in migrainic attacks. They all fall in the above mentioned 3 groups.

The mental phenomena observed are identical with those of infections or intoxications of any nature. They all presented pronounced confusional states with or without delirium, with or without delusions, with or without hallucinations. They were all types of the classical primary psychoses, the etiology of which frequently escapes our observation.

Case 1. - M. S., aged 35, had had attacks of hemicrania for 5 years. At the beginning they were typical in character, viz., presented nausea, pain in the right temple, appearing in the morning and disappearing toward evening. Later these symptoms began to be accompanied by mental disturbances. About an hour after the headache made its appearance, the patient became restless, would move from

one place to another, or would run on the street until some one would stop her, would talk loud in incoherent manner and make gestures. She evidently had visual hallucinations, as she was addressing some one. She was unable to recognize relatives and mistook relatives for strangers; she evidently presented illusions of identity. This condition gradually disappeared at the end of the day, when she vomited and went to sleep. On the following day the patient could not recall a single phase of her attack. Attacks of this nature occurred 5 times within the last year. Otherwise, viz., between the attacks, the patient was entirely normal. Patient was obese and each attack followed a period of Obstinate Constipation.

Case 2. - L. B., aged 48, suffered from migraine for 20 years. During the last 10 years mental symptoms accompanied each attack of headache. Visual and auditory hallucinations were marked; she would see flashes of green and bright lights and hear voices, which she was unable to distinguish. The latter were so annoying to her that in order to silence them she would scream at the top of her voice. As they lasted only two or three hours she would then enter into a state of mild stupor; would sit in a corner of a room, groan and moan, hold her head in her hands, vomit bilious fluid and was somewhat confused. At the end of the same day the condition would clear up and the patient would fall asleep. On the following day the hemicrania would continue, though to a less marked degree. There is an interesting observation concerning the character of sleep. On several occasions it was noticed that she would talk considerably during her sleep, express at times joy and at others fear; she would struggle for breath. When awake she would continue to use the same expressions and present the same facial features as during her sleep. The personal history presents this interesting feature: that until the age of 18 she had Epileptiform Seizures and at 28 the Migrainic Attacks appeared. There was also migraine in several members of the family.

Case 3. - L. L., aged 17, had attacks of hemicrania with vertigo, nausea and ocular pain for 5 years. Occasionally an attack would be accompanied by mental phenomena. She would become delirious, restless, run out of the house, gesticulate, talk in incoherent manner and refuse to recognize her relatives. Visual hallucinations were also present, as she would look at objects and address them. The condition would last about 4 hours, after which she would be in a state of slight mental hebetude, complain of severe pain in the right temple, end the attack.

Case 4. - B. P., aged 42, had had attacks of hemicrania for 15 years. During the attacks of last year mental symptoms developed. Shortly after the headache reached its climax, the patient became confused; feared the approach of people, and feared to look at the wall, as the pictures appeared in the shape of animals. She kept her hands on her eyes, as she dreaded to look up. She was very suspicious, refused to drink water when it was given her, saying, “perhaps there is poison”. While in this condition she would occasionally grasp her head with her

hands and scream from pain. The mental symptoms, as just described, lasted 8 hours, and then the head pain would become aggravated. The patient ended the attack with a vomiting spell. Many members of the family are migrainic.

Case 5. - S. Me., aged 54, had had migraine since she was 34. There had been 2 periods of mental disturbances during the attacks. First period was at the age of 40, 5 attacks in all; second period at the age of 48, 12 attacks, one every 3 weeks. The character of the mental phenomena was similar in both periods. Confusion predominated. Hallucinations concerned mainly the visual sphere and in one attack there was a gustatory hallucination, in which the patient felt the taste of salt in her mouth, when she did not eat or drink during the entire day. In the last attack: Patient developed delusions of persecution, believing that everybody disliked her, that she would soon be put to death. When questioned, she could not give any reason for it nor could she point out any special person. The persecutory state disappeared with the hemicrania which lasted 16 hours. The same phenomena have been observed also during sleep; she talked, made motions with her hands, made occasionally unintelligible exclamations. In the family several members present migraine, also attacks of gout.

Case 6. - P. L., aged 24, had had attacks of essential epilepsy during 5 years since the age of 16. From the age of 21 she had had attacks of typical hemicrania with nausea and vomiting, lasting 6 hours and occurring once a month during menstrual periods. An hour after the onset of the pain in her head the patient would become violent, strike people around her, break dishes. When spoken to she appeared bewildered and unable to understand or to recognize her whereabouts. Then suddenly she would become calm, grasp her head and scream from pain. Nausea and vomiting followed. After a sleep of 9 hours the patient would awake without headache, but an asthenic state with marked confusion would last yet for 2 days. During her sleep she would keep up a conversation, struggle and make motions with her hands. The same attitude was noticed for a few hours after she awoke. A brother had Epilepsy; the mother had Migraine.

Case 7. - C. K., aged 38, had had typical hemicrania for the last 3 years, occurring at first every 3 months, but during the last year every 5 or 6 weeks. When the attacks became frequent, mental symptoms would occasionally follow an attack. They have not been all alike; at one time she would be delirious, at another would present only hallucinations or merely a confusional state. In the last attack which I had the opportunity to witness and treat, I noticed a typical form of hemicrania limited to the left side of the head accompanied by severe pain in both eyes and nausea. At the end of 8 hours patient fell asleep; 4 hours later she awoke astonished at her surroundings; fear and suspicion were on her face; she suspected everybody who addressed her or approached her. Suddenly she fell on her knees and began to pray aloud; this lasted 15 minutes. At the end of this time she began to laugh and for 5 minutes she could not be pacified. When the laughing subsided,

she became morose, taciturn, sat in a corner of the room and remained immobile for 90 minutes. She went to sleep again and awoke at the end of 8 hours in perfect condition. There was an absolute amnesia of the occurrence. The picture of the last attack was certainly of hysterical nature. Indeed, the patient presented a considerable number of hysterical stigmata; areas of anesthesia, of hyperesthesia, contraction of the visual field, and pharyngeal anesthesia. In the intervals between the attacks she frequently had hysterical paroxysms of crying and laughing.

Case 8. - O. G., aged 44, had had hemicrania during 20 years occurring about every three to four months and lasting from 24 to 48 hours. For the last 6 months patient developed mental disturbances, some immediately preceding an attack, some during the attack and some following the attack of migraine. The nature of the mental phenomena was that observed in confusional insanity with the preponderance of illusion of identity. The duration of the mental symptoms was only from 2 to 4 hours. Between the episodes of the migrainic psychoses the patient also had attacks of hemicrania free from mental symptoms.

Case 9. - A. O'N., aged 45, gouty, had had hemicrania since the age of 25, occurring every 4 months after a period of obstinate constipation and lasting 4 days. There was a large number of attacks with mental symptoms, which have been conspicuous by their sudden onset and sudden termination and followed by a profound sleep. They usually occurred when the headache reached its climax and they were similar eitherto confusion or mild stupor. Hallucinations were always present, more visual than others. On several occasions hallucinations of smell predominated. On 2 occasions he attacked his people in the house, believing himself persecuted by an invisible agent. Patient's sleep was peculiar. He apparently suffered from terrible dreams, as he would fight, talk loud, express fear on his face and at times cry. The history of the patient showed that the attacks of migraine alternated with those of gout.

Case 10. - J. K., aged 60, had had hemicrania for 35 years, occurring every 3 months when younger and later every 6 months. Patient remembers having only 5 attacks with mental disturbances. The latter were described by his wife. They would appear toward the end of the migrainic attack and consisted of a tendency to run away, fearing invisible agents (hallucinations); he would scream for help, strike against obstacles. This lasted about 2 hours, after which he became calm, but was confused for 2 days. A profound sleep would naturally follow and clear up the entire condition. Previous history showed chronic rheumatism and obesity.

Case 11. - M. Q., aged 47, has had hemicrania since 36 years of age at the end of each menstrual period. There had been several attacks with mental disturbances, which consisted of a marked confusion with illusions of identity. Once I had the opportunity to witness this condition; the patient addressed me as her own brother and talked in incoherent manner for several minutes. The confusional state

always followed the attack of hemicrania and lasted from 5 to 6 hours. Personal previous history showed marked obesity and attacks of lumbago. Several members of the family suffer from gout.

Case 12. - J. S., aged 28, had had hemicrania since the age of 23, occurring every 5 months. Each attack was accompanied by more or less marked mental disturbances. While the headache was severe, the patient showed pseudo-reminiscenses; would speak of events which occurred in her childhood or youth but would present them in a false light, while she could recall them correctly in the intervals between the attacks. At the same time she would laugh like a child, be restless and see invisible things (hallucinations) which she would address in a familiar manner. At another time a confusional state with vague delusions of persecution would follow an attack of migraine. Once she presented only hallucinations of hearing and sight and conversed with invisible beings for 30 minutes in such a manner that delight and pleasure could be seen on her face. The mental phenomena in this case always terminated abruptly by a spell of crying. This patient had many hysterical stigmata, among which left hemianesthesia was the most prominent.

Conclusions

The histories of the 12 cases present this remarkable similarity that in the majority, if not in all, there are 3 mental states that have been inevitably found, viz., confusion, mild stupor with hallucinations and sometimes vague unsystematized delusions and delirium.

The hallucinations which are so frequent are mostly visual; some patients had auditory and some gustatory hallucinations.

The confusional state predominated in all my patients.

It was quite frequently accompanied by illusions of identity, incoherence of thoughts and language, disturbance of orientation.

The delusions are all of afleeting character and unsystematized.

Some of the cases suggest psychic forms of epilepsy, as, for example, when the patient runs on the street until stopped, or when the patient presenting a mild delirium with agitation ends his attack with a profound sleep.

In a few cases the attack of migraine ended with a state analogous to a post-epileptic state, viz., mild confusion with a condition of profound exhaustion.

In cases 7 and 12 the mental disturbances presented a hysterical character; in one of them a typical attack of hemicrania of 8 hours duration ended in a 4 hour sleep. When the patient awoke she began to show a mild delirium with hallucinations, talking aloud and laughing.

In the second case the mental disturbances also consisted of a mild delirium with pseudo reminiscences and hallucinations.

In another attack of migraine the same patient was in a state of confusion with vague delusions of persecution and hallucinations.

Both patients had hysterical stigmata.

As to the time of appearance of the Mental Symptoms in relation to the Migrainic Attack, in the majority of my cases they developed during the attack when the headache reached its climax and disappeared with the headache.

In some cases they continued for 24 hours after the subsidence of the migraine.

In a few cases the mental symptoms appeared at the end of the attack, in some only after the attack and in one case they preceded the migrainic paroxysm.

The Confusional, Stuporous or Delirious States, the Hallucinations, the Illusions, the Unsystematized Delusions, the Amnesia, are not in the slightest degree clinically distinguishable from those observed in the same Psychoses in other circumstances.

Confusion due to exogenous intoxications, like alcohol or others, is not unlike a confusion originated during puerperium in which autointoxication is a certainty.

So is a delirious state or a stuporous state, so are delusions and hallucinations or amnesia.

These psychoses are, therefore, not independent psychoses.

The point of importance concerning migrainic psychoses consists of their intimate association with the same causes that produced the migrainic attacks themselves, and this is autointoxication.

The histories of migrainic patients are all identical: Constipation, obesity, hereditary predisposition, all figure in the life of such patients.

Autointoxication, therefore, is to be expected and, indeed, it is frequent.

Eegis called attention in 1894, to a special form of delirium called delirium of dreams (delire onirique) which is frequently found in psychoses of toxic origin.

It consists of hallucinatory images and of old events in various combinations, originating in dreams and continued after the patient awakes. If they disappear, they may be reconstructed during the day as soon as the patient closes his eyes.

There is, so to speak, a "prolonged dream".

Originally Lasegue observed it in alcoholic delirium, but according to Eegis it may be encountered in intoxications of any origin.

In his opinion, it is characteristic of toxic psychoses.

These patients presented a sort of a second state, during which they spoke in the same manner and on the same subject as during their sleep.

The present study concerns a subject which is of some importance not only from a scientific, but also from a practical standpoint.

Suffice it to mention the names of Loewenfeld, Brackmann, Koppen, Fere, Agostini, Mobius and particularly of Mingazzini with Pasetti and Krafft-Ebing.

The majority of these writers view the condition as a manifestation of hysteria and epilepsy.

Mingazzini and Pasetti consider the mental disturbances as specific of migraine. In my personal opinion, based on the 12 cases, the psychoses may sometimes present features of Hysteria and Epilepsy, when there is an underlying basis of these 2 Neuroses.

They are intimately connected with the original cause of the Migraine itself, viz; Toxic.

As to the forms of the Migraine Insanities, they are: Confusion, Stupor and Delirium." - Dr Alfred Gordon, MD, Associate in Nervous and Mental Diseases, Jefferson Medical College; Examiner of the Insane, Philadelphia General Hospital in "Migrainic Psychoses", JAMA, 5 January 1907.

Neglect, Overindulgence, Disregarding of Warnings

The Physical Forces of the Body, will always respond, so long as there are the precautionary measures kept.

But when there is either; Neglect, Overindulgence or the Disregarding of the Warnings, given by the body, and sensed by the individual, either as pain, or discomfort, or both.

These then become those disturbing conditions, which are termed - Disease.

Elimination

"Elimination is the keynote of success in alleviating nearly all acute conditions and many that are classed as chronic. Conversely the fact is apparent that the checking of secretion and excretion produces the major number of acute aliments and is primarily the causative factor in many chronic troubles.

Nature gives us the cue to the treatment in nearly all impaired functions if we would but heed her teachings.

It is so easy to forget, or to fail to apply, the knowledge we possess.

The 4 Greatest Organs of Elimination:

Skin
Bowels
Kidneys
Lungs

In close touch with these, being accessory thereto, we should keep in mind the Liver, Stomach, Pancreas and the entire Glandular System." - Dr W. T. Mares, MD in "The Medical Brief", 1905.

Excretion of Toxins

"The Elimination of Intestinal Poisons takes place from:

1. Respiratory Tract

From the lungs are excreted many volatile products, including all the carbon dioxide, and small quantities of ammonia.

2. Salivary Glands

From the salivary glands the salts of potassium, bromine and iodine are eliminated, and sometimes urea; while occasionally leucine and xanthin bodies are also found. Sometimes severe attacks of salivation arise, which suggest the excretion of enterotoxins.

3. Sudoriferous Glands

From the sweat glands water, urea, and ammonia are excreted. As much as 1.2 per thousand of urea may be found, and in many people who refuse or are unable to take exercise, crystals of urea may exude from the skin. Fatty volatile acids, cholesterin, and creatinine are sometimes found, whilst not infrequently the products of intestinal toxaemia are observed. Severe nocturnal perspiration is common in children who eat largely of meat or flesh foods. The common occurrence of acne in young adolescents is not unconnected with intestinal toxaemia. **Phenol, Skatole, Indole, Ethereal Sulphur,** and aromatic oxyacids have all been found. Very occasionally indicanhydrosis has occurred in association with blue perspiration. D. Rutherford Adams (Glasgow Med. Journ., 1916) had a case of intestinal ulceration in which indigo appeared in large quantities in the urine, being replaced later by (the less oxidised product) indican.

4. Kidneys

The kidneys, however, are the main eliminating agencies for the aromatic bodies which have been absorbed into the blood from the intestinal canal. Indole, skatole, ethereal sulphates, and glycuronates are regularly met with in the urine.

Hence deficiency of renal activity leads to retention and auto-toxaemia.

5. Bowels

From the bowels are excreted **Indole, Skatole, Phenol, Oxyacids,** and so forth, but these give no indication of the existence or amount of toxaemia, as only toxins which are absorbed into the blood and are excreted in the urine or other eliminating organs can be used to estimate the amount of Toxaemia." - Dr Alexander Bryce, MD in "Intestinal Toxaemia or, Auto-Intoxication in the Causation of Disease", 1920.

> ***"The tap-roots of life are secretion and excretion. Much attention is paid to the secretions requirements of life, in the form of rich and excessive quantities of food, but little to the stern requirements of excretion. It is all summed up by Dr Arthur Foges, MD head of a great Vienna clinic, and author of "Atlas der Rectalen Endoskopie", 1910, stated that "the 8 meters of human intestinal tract is the most prolific source of disease".***

The reason is that faulty elimination permits putrefactive (meat) poisons in the intestinal tract in the presence of warmth and moisture, facilitated by delay (intestinal stasis, constipation and allied disorders), with the result that the body is infected with poisons carried by the blood stream.

The overworked kidneys and liver, let enough of these toxins get by to do irretrievable damage to vital organs.

The infection of the heart is the principal reason why heart disease now leads tuberculosis as a cause of death. It also explains why we have bad tonsils, bad teeth, rheumatic joints, degeneration of the arteries, kidney and liver disease, etc., and why so many people do not have enough energy in reserve to sustain the strain of life, but die at ages around 60 and 65, often much younger." - John Scott Haldane, Fellow of the University of Oxford, on the Cause of Many Diseases, in "New Outlook", Vol. 148, 1928.

> ***"Toxic accumulation, from unwitting or wilful abuse, gives rise to disease. To prevent it, the body reacts from time to time, and extrudes, through the eliminating mechanism put there to that end, this poisonous waste.*** *When it does so, we are temporarily upset or "ill". Much fever is a fermentive reaction, the purpose of which is to burn up waste." - Dr Ulric Williams, MD, "Hospitals and Hooey or Health?", 1941.*

> ***"What the colon does not excrete, must excrete the kidney, what the kidney does not excrete, must excrete the skin, what the skin does not excrete, must excrete the lungs."*** *- Chinese Theorem*

The Cause Of The Children's Trouble?

"Wrong Thinking, Wrong Feeding, and Wrong Habits, Food Poisoning, due to ignorance and indifference, made much worse in Hospital; and Constipation."

Few indeed of the childish ailments and illnesses are unavoidable.

They are mostly the direct consequence of Wrong Thinking, Wrong Feeding, and mistakes in general supervision; and are therefore a reflection upon the mother's methods.

Chicken-pox, Measles, Whooping-Cough, Diphtheria, Are Not Diseases of Childhood; they are Disorders of Ignorance and Mismanagement.

They Are Not Diseases At All.

They are acute illnesses; and therefore reactions, curative in intent, against existing disease. If children were brought up sensibly they would never occur.

Nor would "Infantile Paralysis", Tuberculosis, or other evidences of mental and food foolishness." - Dr Ulric Williams, MD, Surgeon, in "Hints on Healthy Living", 1939.

Eliminations Channels of the Body

The Emunctologist should known that **at least half of health conditions are due to poor eliminations** (hand in hand with poor circulation).

There is no condition existent in a body that the reflection of same may not be traced in the blood supply, for not only does the blood stream carry the rebuilding forces to the body, it also takes the used forces and eliminates same through their proper channels in the various portions of the system.

Hence we find red blood, white blood and lymph all carried in the veins. These are only separated by the very small portions that act as builders, strainers, destroyers, or resuscitating portions of the system. For always in the blood stream there is seen the reflection or evidence of that condition being enacted in the physical body.

Thus it is imperative to known, study and understand the mechanisms in which and by which these channels of elimination of the body work.

1. Primary Channels of Elimination

a) Lungs by Respiration.
b) Skin by Perspiration.
c) Bladder (Kidneys) by Urine.
d) Bowel by Defecation.

2. Supporting Channel of Elimination

Lymphatic System.

3. Detoxification Organ

Liver.

A Few Words in Regard to The Functions of The Waste and Repair of The Animal Tissues

"Every action of any organ of the body is accompanied with the decomposition of a certain amount of the substance of such organ.

Thus, when a muscle contracts, a portion of its tissue is broken up into substances of a lower grade.

These enter the blood, and are finally excreted from the body through the Emunctories of the:

1. Skin.
2. Lungs.
3. Kidneys.

Every pulsation of the heart, every action of any gland, every thought of the brain, involves the disintegration of heart, gland, or brain substance, respectively.

Of course, it needs very little reflection to convince any one, that, if this waste goes on without the production of new matter, a period will be reached at which action is no longer possible.

To provide, therefore, for the loss which is continually taking place, we eat food, which undergoes the necessary transformations in the body, and eventually is deposited where it is wanted, whether in the muscles, the glands, the brain, or other organs.

The process by which the tissues break up into inorganic matter is called regressive or destructive metamorphosis; that by which new life is formed from the food, progressive metamorphosis.

When in an adult person these two processes balance one another, the body undergoes no variation in weight.

If the first is in excess, the body is consuming its capital, and loses weight; if the second, the body is "laying up for a rainy day", and gains weight." - Dr William A. Hammond, MD, [the first American physician to devote himself entirely to neurology, author of the first American treatise on neurology], in "The Sanitary and Physiological Relations of Tobacco", The North American Review, April 1869.

Chapter 7

The Immune System

"What really keeps us healthy is a strong immune system." *- Dr Paul Thomas, MD in "The Truth About Vaccines", 2017.*

Immunology and Gastroenterology

"Immunology and Gastroenterology are associated due to the part of the gastrointestinal tract with respect to the maturation of the immune system and because of the abundance of immunocytes within the mucosa. Therefore on the one hand a deformity is followed by immune deficiency, on the other hand contact between antigens and the immune system may cause different types of hypersensitivity.

Autoimmunopathy: It may be a primary disease of the gut but also a partial manifestation of a generalized reaction. Each malignant immunoproliferative disease may strike the gut. So the diversity of interaction between the gastrointestinal tract and the immune system causes a variety of immunological disease." - H. W. Bankler, in "Immunology and Gastroenterology", Fortschr Med., 19 April 1979.

Intestinal Permeability

The thinning of the walls of any given part of the small intestine, also known as "intestinal permeability", is one of the pathways that causes arthritis, chronic fatigue, migraines, celiac disease, psoriasis, diabetes, lupus and other skin conditions.

Treating Disease, it is to Maintain Efficient Elimination

"It is not particularly strange that some of the patent medicines are credited with curing certain ailments. Most of them contain a purgative which favours elimination and hence when the bowels are unloaded, the human water-closet is abandoned. Relief is considered a cure.

Symptoms are attributed to some organic lesion which did not exist. From these facts the physician may learn a lesson. Too often the directions to take a cathartic

are given haphazard and neglect results. The patient does not appreciate the importance of it, and yet careful attention to details of this kind will often be the means of winning a battle.

The number of cathartics are legion and it is not difficult for a competent therapeutist to select one that will accomplish definite results. Too frequently we forget that the several classes of cathartics perform an office other than to simply unload the bowels. If in every case the rational use of cathartics was considered and the action of each agent of this kind was studied more carefully, as to its action and appropriateness, a less number of drugs would be used and more cures would be obtained.

Dr. Andrews, in the Medical Summary for January, calls attention to elimination by other means, which is timely indeed.

If there is one thing more essential than another to keep in mind in treating disease, it is to maintain efficient elimination. The retention of dead matter in the system leads to an impoverishment of the blood which may produce symptoms protean in character. Chronic headaches, anemia, despondency, and "the blues" are conditions quite often dependent upon re-absorption from the alimentary canal. Many neuroses are dependent upon the same cause. Dyspepsia, bronchitis, and many chronic troubles are due to autotoxemia.

Salts, castor oil, and the colon tube are about our most efficient therapeutic agents. But let us not think that the alimentary canal is the only source of elimination. The skin is the greatest emunctory in the body, and an impervious covering put all over it would be to invite the family undertaker.

Dermal elimination is a matter that should not be overlooked, no matter what the disease may be.

The kidneys eliminate poisons that if retained in the system would cause death in a few hours.

Water is our best diuretic, and there are few conditions that preclude the drinking of pure water in generous quantities.

The lungs in the respiratory process perform an essential eliminative function, and pure air in all diseases is a “sine qua non”.

All these functions are mutually dependent upon one another, and when one is crippled, the others to some extent, take on a vicarious action to relieve the one in distress.

If we keep up good elimination from the bowels, kidneys, skin, and lungs, other things being equal, we have placed our patient in a fair way to recover." - in “The Central States Medical Monitor”, 1908.

So Called Latent Syphilitics or Paretics and Tabetics, A Water Suggestion

"A dirty sponge when soaked well with water can be cleaned. Without the soaking there will and must remain in the interstices of the fabric whatever waste and foreign matter may have been introduced. Fill the sponge with water and squeeze it: out comes the foreign matter. Continue this process, and after a time the sponge is clean.

The human body is a sponge with millions of interstices that may become receptacles for foreign matter. Some of the tissues of the human body are dense; the brain, for instance, and the nerve structures generally, as well as the joints and tendinous and ligamentous structures. From this class of dense tissues lodgements of foreign matter will be liberated and eliminated with more difficulty than from looser tissues, such as the muscular tissue, from which these lodgements may be delivered to the Emunctory System by ordinary massage. I am led to express this idea to suggest a practical view, in addition to the scientific view taken by the profession. "Latent or dormant syphilis of the cord" simply means, it seems to me, that the spirochetes of long years ago have been harboured in the denser tissues and have not been dislodged by the free emunction to be brought about by a systematic inhibition of water to flush effectively the 4 Emunctories: Skin, Kidneys, Bowels, and Lungs; while the necessary medication was being used.

We cannot flush sewers Without water. It makes little difference whether the toxemia be posttyphoid, postsyphilitic, postdiphtheritic, or a toxemia from absorption of toxines from the small or large intestine or from other sources.

There are but four channels of Emunction, and we cannot get free Emunction without water, approximately 75%, of the normal weight of the body, in the system.

Many of our patients are below the normal weight. We must remember that food gives weight to the body only when transported to its destination by the requisite amount of water to keep up the body weight. Low weight, then, means an insufficient amount of water in the body.

Lack of resistance to disease means that the food taken has not been delivered to its destination with the proper amount of water.

Unless there is an adequate circulating medium - the proximate principle, water - it will be difficult to furnish the body with nutriment and much more difficult to rid the same body of a toxemia or the medication used in combating it." - Dr J. C. Minor, MD, President of the Board of Health; Surgeon General, Arkansas National Guard, in "New York Medical Journal", 16 August 1913.

Emunctories & Therapeutics

"The assimilation of food entails the removal of waste. When food is taken and digested, it serves two distinct ends. Part of it is burnt up, either forthwith or at some more distant date, while another portion is utilised in tissue-building and repair. The products of such assimilated material are, speaking broadly, carbonic acid, water, and nitrogenised matters in various stages of oxidation.

These excreta, if retained, act in a prejudicial manner.

Of water, there is little to be said, though certain mischievous results follow when its excretion is interfered with. Carbonic acid is a well known poison, whether respired or generated within the body, and but insufficiently excreted. Carbonic acid poisoning is the great danger of bronchitis, where the patients do not die so much because they cannot inspire oxygen as because they cannot get rid of their carbonic acid, the experiments of Rosenthal and Pfluger notwithstanding.

The disastrous consequences of nitrogenised waste matter in excess in the fluids of the body are well known, whether as attacks of gout, as other manifestations of lithiasis, or as uraemia, the result of excess of the earlier products of retrograde metamorphosis of azotised matter. Much of the nitrogenised waste is the result of the splitting up of albuminous matter in the liver, the resultant products being glycogen and tyrosine, creatine, creatinine, and the other early forms of azotised waste, which by oxidation become converted into uric acid and urea.

The products of waste of tissue are also water, carbonic acid, and the above mentioned nitrogenised matters.

In consequence of the poisonous characters of these waste matters, they are eliminated from the body by various emunctories, and the amount at one time within the organism is kept under ordinarily by the action of one or more of the excretory systems.

What these excretory systems are, will next engage our attention.

Water is excreted by the skin, the kidneys, and the lungs. A certain flow of water through the body is essential to the elimination of waste products, many of which are held in solution. Carbonic acid finds its way out of the body chiefly by the lungs. Nitrogenised matters pass off by the skin as well as by the kidneys; but, under certain circumstances, especially of impaired respiration, carbonic acid passes off by the skin; and uraemic diarrhoea is far from uncommon in the subjects of chronic renal disease.

We are too much inclined, indeed, to regard the functions of the different excretory organs as being highly specialised, and to lose sight of their common characters of the unity of function which accompanies their homologies of structure.

The different excretory organs of the body are but involutions of the common tegument, and retain in their most elaborated form their primitive characteristics. In the lowliest forms of life, the tiny organism taken as food can be seen to melt away in the speck of sarcode by which it is engulfed.

The waste products pass away from the general surface, and no one part can be

recognised as being more especially functional than another. A little higher up, we find a simple short tube, which may be turned inside out, and its intestinal canal converted into a tegument (protective outer cover), and its external surface into a digestive canal, apparently without disturbance to the animal. As we ascend, the scale of creation and evolution gives us more elaborated forms; we find that different portions of the general surface have undergone modifications; certain parts have become limbs, organs of progression, while others again have been converted into organs of excretion. We find that one deep involution of the general surface has become a gastric pouch, which in time becomes a long digestive track, along which are secondary involutions, giving us the salivary glands, the liver, and the pancreas.

Another involution furnishes the urinary apparatus, the first sac forming the bladder, with its secondary involutions the ureters and kidneys. In the desquamation of the uriniferous tubules of the kidney during the cutaneous exfoliation of scarlatina, we find a marked clinical instance of the relations of the skin to the epithelial lining of the kidney.

Community of Origin of the Various Emunctory Organs

When we come to consider the community of origin of the various excretory organs, we can the more readily comprehend the unity of function which underlies their apparent specialisation. We are all familiar with the fact that, when there is a defective elimination or excretion of bile by the liver, or when the bile-duct is obstructed by a ligature, the bile passes into the circulation generally, and is found in large quantities in the urine, as well as being excreted by the skin to such an extent as to tinge the linen. Not only so, but it has been found in the pancreatic juice and the mammary secretion. Urea was found in the sweat by Schottin in cholera collapse, where suppression of urine is common.

Further examinations were made by different observers, until it has been found that, in the presence of urea, the phosphates and chlorides of the alkalies, the constituents of sweat, are those of urine. Fourcroy had long ago found urea in the sweat of horses. Leube has shown that there is such a relation existing between the skin and kidneys in function, that, when the skin is active, the kidneys secrete less than their normal amount of urea. All who have had much experience are familiar with the urinous odour of the breath, and the ammoniacal character of the vomited matters and the dejections in cases of uraemia.

Zalesky found that ligature of the ureters in serpents was followed by an incrustation of uric acid upon the mucous and serous surfaces of the ophidians.

An offensive odour of the breath is commonly found along with inaction of the bowels or skin. We have, indeed, abundant evidence of the capacity of one emunctory of the body to supplement the function of another when impaired or suppressed. This leads us up to two general considerations, both of much practical value. One is the supplementing of the function of an organ, when that organ is disabled by disease, by exciting compensating activity in another organ.

The second is the true and proper treatment of excessive activity in any organ, when that activity is rather a compensatory action than a morbid process. These are practical considerations of the greatest weight in rendering our therapeutic measures not only more rational, but also more effective.

We are all familiar with the burning skin of pneumonia, which has been attributed to an increase in the cutaneous respiration when the ordinary respiration has been interfered with by disease. In the lower vertebrata, the cutaneous respiration is a much more important matter than it is in man; nevertheless, a certain amount of carbonic acid is normally given off by the skin in human beings.

This power of the skin to aid in respiration when the ordinary respiratory organs are the subject of disease, may help to explain the good effects of diaphoretics in the treatment of such ailments.

The dilatation of the cutaneous vessels, the increase of moisture on the skin, so favourable to the transpiration of gases, probably increase the cutaneous respiration; and in this we may find the explanation of the beneficial effects of those remedial agents which empiricism has already taught us to employ.

Of course, it will not do to overlook the effects of dilatation of the cutaneous vessels, and the consequent enlargement of the vascular area, which produce the same effect upon the circulation as venesection; in fact, it is only bleeding the patient into his own vessels. Probably, in the treatment of acute affections of the respiratory organs, the method of giving a patient a bath in his bed will ere long obtain among adults, as it already does among children. With them, it is easy to roll them up in a blanket wrung out of hot water, the beneficial effects of which are familiar to all.

When there is any impairment in the functional activity of the kidneys, the resort to supplementary action in other excretory organs is alike the refuge of nature and of art.

Where there is imperfect water-elimination, we at once act upon the skin and bowels, and excite them into increased functional activity, to compensate the defective action of the kidneys. It is not, however, in water-elimination alone that efficient aid can be furnished by exciting other organs into high activity, the same holds good of the solid matters of the renal secretion.

We have just seen that the elimination of nitrogenised waste is a much more general matter than is commonly supposed. Consequently, when there is any accumulation of azotised waste in the system, we proceed to set the bowels in action, and also to excite the activity of the skin.

Long ere physiological investigation had laid bare to us the rationale of the measures employed, empiricism had pronounced in their favour.

Full doses of cathartics, the more hydragogue the better, and sharp action upon the skin, by any form of bath, are the measures upon which we rely in the treatment of the ailments which are the results of imperfect renal action.

If by our measures we can keep down the amount of nitrogenised waste in the system, until the kidneys are once more efficient, the organism is tided over a

period of mortal peril; if our measures be insufficient from any cause, then the individual perishes, poisoned by self-made waste.

This application of remedies to the relief of various ailments, the result of imperfect excretion, leads us straight up to the question of the proper treatment of what are rather compensatory actions than morbid processes.

A good example is furnished by the consideration of uraemic diarrhoea.

This is a spontaneous supplementary action of the bowels far from uncommon in adult and advanced life. Here the action of the bowels is not a morbid process to be arrested at all hazards; it is compensatory action, to be conserved until other Emunctories are opened.

Certain it is that such action ought to meet with no attempt to check it, until other channels are patent. It is so common to meet with a limited bulk of urine in diarrhoea, that the more or less complete suppression of the urine in these cases is scarcely noted.

Nevertheless, if the diarrhoea be arrested, and usually very active measures are required to achieve this result ere the function of the kidneys is re-established, the consequence is, that the symptoms of uraemic poisoning come on, and the activity of the treatment is followed by the destruction of the patient.

This is an eminently undesirable result for all concerned.

The rational and proper plan is to meet such diarrhoea by measures calculated to rouse the action of the skin, to apply hot poultices over the loins, to give gentle diuretics, as potash and buchu (Agathosma Betulina), in small doses, and to avoid the further production of azotised waste, which would result if beef-tea were given in any great quantity.

By such measures, the case may be steered to a desirable termination; the diarrhoea gradually ceasing as the action of the kidneys is re-established. In practice, it is most necessary to follow the rational indications. Too frequently, it is to be feared, the salvation of the patient lies in the difficulty of arresting the diarrhoea.

Many cases owe their good results, not certainly to the treatment, but to the fact, that these preservative processes are hard to check, and that consequently the sick person survives in spite of the treatment. In gouty bronchitis, and much winter bronchitis in those advanced in life is of this nature, we find that iodide of potassium and warm clothing are the most efficient methods of treatment.

But neither of these agents exercises any direct effect upon the bronchial membrane.

Yet they exercise no slight indirect action. In this form of bronchitis, the hyperaemia of the lining of the respiratory tract occasioned by the low temperature of the respired air results in a certain amount of mucous flow, and this soon furnishes an excretory surface for the elimination of uric acid.

The low temperature arrests the action of the skin, and, the functional power of the kidney being insufficient, an accumulation of uric acid in the blood results, while the bronchial lining furnishes an outlet.

The iodide of potassium renders the uric acid or urates soluble, and they wash

away in the water-currents of the system, while the warm clothing keeps up the action of the skin.

Consequently, we see that the measures we have been taught to adopt are those which are best fitted to achieve the desired end. It not rarely happens that a diarrhoea which is intractable to ordinary measures yields readily to doses of citrate of potash (very minute doses, as to produce an irritation to the functioning organs, or as related to the adrenal or endocrine glands, given under supervision of a practitioner), and a free flow of urine precedes any abatement of the diarrhoea.

It is not sufficient in lead poisoning to render the lead soluble by iodide of potassium; an occasional purgative is also indicated.

The reason of this is, that the iodide of lead circulates in the portal system, and is being constantly thrown out arid reabsorbed.

A sharp purgative washes it through the bowels, and so hastens the process of cure by iodide of potassium.

Another point of much importance in the consideration of excretion is that of the relation of anaemia to imperfectly depurated conditions of the blood.

We are all familiar with the presence of anaemia in lead poisoning, in malarial and syphilitic poisoning, and also with other forms of poisoning, as in lithiasis, or the less known but common form of anaemia due to faecal accumulation and reabsorption of faecal matters.

In all these cases, the bulk of blood is diminished by the action of the poison - whether by destroying the blood-corpuscles, or by interfering with their formation.

The removal of the poison is followed by improvement, even before chalybeates (type of natural spring water containing significant levels of dissolved mineral salts, including iron and manganese) are administered.

Thus, in syphilitic anaemia, the improvement which follows the administration of mercurials is often marked ere iron be given: at times, indeed, the substitution of mercury for iron is at once followed by an improved condition of blood.

We all know how desirable it is to combine purgatives with haematics when anaemia is associated with constipation.

Not rarely in anaemic conditions of lithiasis, or irregular gout, the lips recover their hue, and the anaemia is much ameliorated before iron has been added. In fact, we have abundance of evidence to show us clearly that the efficient elimination of waste matter is an important factor in blood-formation, and that the treatment of anaemia is not the simple matter of giving liberal supplies of food together with chalybeates.

The series of agents denominated alteratives do not possess any mysterious action. They are found in the different excretions; they increase the activity of excretory processes, and, by inducing more perfect depuration of the body-fluids, they lead to other blood-formation; and in so much they form excellent auxiliaries to restoratives and haematics." - in "Excretion and Therapeutics", The British Medical Journal, 16 January 1875.

"The organs composing the Emunctory System that is: Liver, Kidneys, Alimentary Canal, the entire circle of the Mucous Membranes, and the Skin, with its millions of sudoriferous and sebaceous glands and ducts-constitute the machinery, the channels, through the medium of which the syphilitic poison can be removed from the animal economy.

Although the anatomical apparatus we have to work with is situated in different portions of the frame, and in structure possesses no special homogeneousness or resemblance in its several parts as above named, yet as a group, and in respect to function, they sustain a close affinity or relation; and fortunately, in a practical point of view, they can be brought to do good service either by the same remedial agents, varying in quantity and in the modes of administration, or by different remedies so compounded as to perform a harmonious action, and leading to the same practical results.

And thus, if a case of constitutional syphilis be cured, it is in this way that these emunctory forces, inherent in the system, carry away day by day, the poisonous element, until the last particle is exhausted, and the morbid process engendered by its presence is brought to its final rest." - Dr Silas Durkee, MD in "Treatise on Gonorrhoea and Syphilis", 1864.

"All healing comes from within"

Fundamental Methods of Treatment

"Let us in the next place examine the fundamental methods of treatment which have been adopted and followed in the treatment of disease.

According to Christian Friedrich Samuel Hahnemann there are only 3 possible relations between the symptoms of diseases and the specific effects of medicines, namely:

1. Opposition
2. Resemblance
3. Heterogeneity

It follows that there are only three imaginable methods of employing medicines against disease; and these he denominates:

1. Antipathic
2. Homeopathic
3. Allopathic

Antipathia: The Antipathic method consists in employing medicines which produce effects of an opposite nature to the symptoms of the disease, and the axiom adopted is contraria contrariis opponenda; hence the origin of the term Antipathic, from the Greek words opposite, and a disease.

We may regard Hippocrates as the founder of this doctrine, for in one of his aphorisms he says, "all diseases which proceed from repletion are cured by evacuation, and those which proceed from evacuation are cured by repletion: and so in the rest, contraries are the remedies of contraries.

We adopt this practice when we employ purgatives to relieve constipation, depletion to counteract plethora, cold to alleviate the effects of scalds, or narcotics to diminish preternatural sensibility. Whenever we attempt to influence the system by any external agent, say his followers, a tendency to reaction is set up: so that if the primary effects of an Antipathic medicine be of an opposite kind to the phenomena of a disease, the secondary effects, or those which arise from the reaction of the system, are similar to the morbid phenomena, and, therefore, only produce an aggravation of the original malady.

To all theoretical objections of the kind here offered, our only answer can be an appeal to experience; which, I think, warrants us in frequently ascribing a beneficial influence to this mode of treatment." - Dr Jonathan Pereira, MD, FLS in "The London Medical Gazette", 24 October 1835.

Emunctology Statement on Vaccines

Only Bacterial Vaccines, may have a place in Emunctology, these vaccines must be made by the Hospitallers Order of the Good News, never under no circumstances by a private, or any other organization, no matter if they claim to be not for profit or even governmental.

Only vaccines produced by the Hospitallers Order of the Good News can by used, if need be, **but only and under the following non changeable principles:**

a) Hygiene
b) Nutrition
c) No less than 9 months
d) No more than 1 vaccine in a 7 day period.

1. If a body in an Hygienic Condition (not sterile but hygienic).

2. Well Nourished (kept in a good nourished condition; with Proper Quality Nutrition; not quantity, but quality, and of nutritious values. Which include weekly consumption of Lettuce, Celery and Carrots, not forgetting at least once a week Fish or produce from the open Salt Sea or Ocean).

3. No vaccines should ever be given to children younger than: 9 months of age.

4. No more than 1 (one) vaccine should ever be given to any body in a week, thus no more than: 1 (one) vaccine in a 7 (seven) day period.

Antibiotic Use Before Age 2 Risks of Childhood-Onset of Asthma, Allergic Rhinitis, Celiac Disease, Attention Deficit Hyperactivity Disorder ADHD

"To investigate the extent to which antibiotic exposure in the first 2 years of life is associated with the risk of Immunological, Metabolic, and Neurobehavioral health conditions with childhood onset.

This study included 14,572 children (7026 girls and 7546 boys), of whom 70% (10,220) received at least 1 antibiotic prescription during the first 2 years of life.

Early Antibiotic Exposure was Associated with an Increased Risk of Childhood-Onset:

Asthma,
Allergic Rhinitis,
Atopic Dermatitis,
Celiac Disease,
Overweight,
Obesity, and
Attention Deficit Hyperactivity Disorder
(hazard ratios ranging from 1.20 to 2.89; P<.05 for all).

The associations were influenced by the number, type, and timing of antibiotic exposure.

Moreover, children exposed to antibiotics had a higher probability of having combinations of conditions, particularly when given multiple prescriptions.

The present study finds significant associations between early life antibiotic exposure and several distinct health conditions with childhood onset." - Dr Zaira Aversa, MD, Dr Elizabeth J. Atkinson, MS, Dr Marissa J. Schafer, PhD, Dr Regan N. Theiler, MD, Dr Walter A. Rocca, MD, Dr Martin J. Blaser, MD, Dr Nathan K. LeBrasseur, PhD, in "Association of Infant Antibiotic Exposure With Childhood Health Outcomes", Mayo Clinic Proceedings, 15 November 2020.

Organic Life

"Things most familiar are but little known. Life, disease, and death are surely familiar to the race. These familiar and fundamental manifestations in the animal cycle present much that is unknown, much that is speculative, much that is mysterious.

Life can not be well de fined and but poorly described. It has been described as the double metamorphosis of matter and force, a process, an energy which is constructive and regenerative in contra-distinction to disease and death, which is destructive and degenerative.

There is operating in the universe all about us these two antagonistic principles,

the one building up, the other tearing down; each is essential to, and the compliment of the other.

If life changes matter, so does disease and death, but life is an antagonistic force, in that while it perfects, preserves, and perpetuates the organized body, death and disease debase, disintegrate and destroy organization but not matter, for that is indestructible.

Life accumulates and actuates the vital units, which are organic cells.

Disease and death are, on the other hand, exhaustion of cell potential and cell disintegration or destruction.

> *"Nothing is born, nothing dies; there is only composition and decomposition; everything returns to the place whence it came, and the sum of Nature does not change." - Hippocrates*

We learn to recognize in our bodies two kinds of life, due to our constitution, organization.

The living body is made up of organs, and each organ is built up of tissues, each tissue is elaborated from cells. Every cell must regenerate and reproduce itself, or cell life ceases.

This life of cells manifested by reproduction, growth, and repair, is constantly going on in our bodies and is called organic life, in contra-distinction to that higher order of functionating, manifested in the individual as the result of the possession and potentiality of a nervous system, called animal life.

We recognize the one by sensation, motion, and consciousness, and the other by mere vegetative manifestations.

Each vitalized cell in the animal body, as a result of its own vitality, disintegrates and regenerates itself.

The condition of body, which we call health, is dependent upon the incessant formation and elimination of organic materials.

The condition known as disease is the result of an interference with the normal operations of health, arising from some definite disturbing cause.

Hippocrates, believed disease to be something tangible, which, in some way got into the body from without, and his classic treatise on "airs, waters, and localities," breathes with a prophetic inspiration of the modern thought of:

> *"The influence upon a man of his environment in the air which he breathes, the heat or cold which is about him, the soil upon which he lives, the food which he eats."*

Again, we are almost startled to find him teaching:

> *"That disease arises from a morbific principle which must be expelled."*

We of the present century have isolated the "materies morbi" of our ancient brethren, have found that it lives and multiplies both within and without the human body, that by contact with it, under favourable conditions, it produces

sickness and death, and is called a "contagium vivum". - Dr George F. Keene, MD in "The Care of Contagion with Special Reference to Tuberculosis", Charities The Official Organ of the Charity Organization Society of the City of New York, 28 July 1900.

Organic Functions

The organic functions:

1. Circulation
2. Respiration
3. Secretion
4. Digestion
5. Absorption
6. Excretion

"Properly speaking, the organic functions are simply those which contribute to the support and life of the tissues of which the body is composed, without regard to the purposes for which these tissues are individually adapted.

It is, for example, by the organic functions of circulation, absorption, secretion, nutrition, etc., that bones, muscles, skin, nerves, blood-vessels, the lungs, the eyes, the brain, and all other parts, are formed and nourished.

The organic functions thus serve for the formation, life, and support of every kind of structure; and hence they might, without impropriety, be called nutritive functions." - Dr Andrew Combe, MD in "Treatise on the Physiological", 1848.

> *"The later men, and pre-eminent should be named Dr Hughes Bennett of Edinburgh, have taken a far different course in this class of affections. The view they advocate is, that* ***inflammation owes its origin to the presence of some agent in the system, in itself depressing; and that the attack, per se, is proof of deterioration of vital power, and hence to be best treated, not by means that still further reduce that power, but by careful avoidance of hurtful measures, and by the use of means which will uphold the system and favour the removal of the poison by the natural Emunctories - in one word by a supporting and eliminating treatment."*** *- Dr William Newman, MD in "The Present Treatment of Disease", The British Medical Journal, 25 April 1863.*

Microbiome

"The collection of microbes and their genes that exist within and on the human body, collectively known as the microbiome has emerged as a principal factor in human health and disease. Humans and microbes have established a symbiotic association over time, and perturbations in this association have been linked to several immune-mediated inflammatory diseases (IMID) including inflammatory bowel disease, rheumatoid arthritis, and multiple sclerosis. IMID is a term used to describe a group of chronic, highly disabling diseases that affect different organ systems. Though a cornerstone commonality between IMID is the idiopathic nature of disease, a considerable portion of their pathobiology overlaps including epidemiological co-occurrence, genetic susceptibility loci and environmental risk factors. At present, it is clear that persons with an IMID are at an increased risk for developing co-morbidities, including additional IMID. Advancements in sequencing technologies and a parallel explosion of 16S rDNA and metagenomics community profiling studies have allowed for the characterization of microbiomes throughout the human body including the gut, in a myriad of human diseases and in health." - J. D. Forbes, in "The Gut Microbiota in Immune-Mediated Inflammatory Diseases", 2016.

The Importance of the Microbiome in Health

No living organism on Earth can exist without the relationship with microorganisms.

"Life would not long remain possible in the absence of microbes." - Louis Pasteur

"In short, we argue that humans could get by without microbes just fine, for a few days (If we do include mitochondria and chloroplasts as Bacteria, as we should, then the impact would be immediate - most eukaryotes would be dead in a minute). Although the quality of life on this planet would become incomprehensibly bad." - Jack A. Gilbert, Josh D. Neufeld, in "Life in a World without Microbes", PLOS Biology, 16 December 2014.

Important Note Regarding Vaccines

"Before we consider the various methods of standardisation which have been employed heretofore, it will be necessary to glance for a moment at the nature and constitution of the vaccines which are in common use.

An anti-typhoid vaccine may be prepared in any of the following ways:

a) Sterilising by heat or by some antiseptic, such as lysol or carbolic acid, a well-grown broth culture of bacillus typhosus. A vaccine of this nature was employed by Leishman, Harrison, Smallman and Tulloch in a recent research on the blood changes following anti-typhoid inoculation. We shall call this "broth vaccine".

Vaccines prepared by this method consist of:

1. Constituents of the broth, such as peptone, etc.

2. The Extra-Cellular Toxins of the Bacteria.

3. The free "receptors" arising either by disassociation from, or by the dissolution of the bodies of the bacteria.

4. The undissolved bodies of dead bacteria, with their intra-cellular toxins and constituent receptors.

b) Suspending the surface growth of agar cultures of bacillus typhosus in a fluid medium, such as normal salt solution, and then killing the bacteria in the same way as in the case of broth cultures. It is the method now recommended by a committee of German bacteriologists convoked at the instance of the Prussian Government. An agar vaccine is of similar composition to a broth vaccine, the constituents of the broth and the extra-cellular toxins being, however, in very small quantity.

c) Dissolving up the bodies of the bacteria, either in a broth culture or in the emulsions of the agar cultures, and then filtering through a porcelain filter. It was first shown by Wright and Windsor that the filtrate of a broth culture of bacillus typhosus, which had been macerating at 37°C. for a period of 5 months, diminished the bactericidal power of a serum with which it was mixed to exactly the same degree as the unfiltered culture. Strong working with the cholera vibrio prepared a vaccine in the following manner: The surface growths on agar, 20 hours old, were suspended in sterile water; the bacteria were then killed by heating at 60°C. for from one to 24 hours; the mixture was afterwards put aside in the incubator at 37°C. For from 2 to 5 days and finally filtered through a Reichel candle. With such a vaccine he was able to immunise animals and to produce both specific agglutinins and bactericidal substances in their blood. A similar method of preparation has been adopted in the case of anti-typhoid vaccine by Bassenge and Mayer. These workers suspended typhoid bacteria grown on agar in sterile water; the emulsion was well shaken up and then filtered. By this means a filtrate, free from bacteria and which gave rise on inoculation into animals and men to agglutinating and bactericidal substances, was obtained. A vaccine prepared by this method we shall designate "filtrate vaccine", the word "agar" or "broth" being prefixed according as an agar or a broth culture has been used in its preparation. A filtrate vaccine will be of the same composition as the broth or agar vaccine from which it was prepared, less the bodies of the bacteria and particulate debris, the remains of broken-up organisms. If such a vaccine is properly prepared, the total receptors which are present in the original emulsion before filtration should be found in the filtrate. Many advantages have been claimed for these filtrate vaccines, to wit, that being clear and free from suspension their freedom from contamination is easily appreciable even by a layman; that the local and general reactions caused by their injection as much lessened; and finally that the degree of immunity conferred is as great as that given by other vaccines which contain the bodies of the bacteria and lasts as long." - in "On the Standardisation of Anti-typhoid Vaccine", Scientific Memoirs, No.21, 1905.

Chapter 8

Of our Evacuations, and their Obstructions

"The 3 Principal Evacuations are:

1. By Siege (stools)
2. By Water
3. By Perspiration

All these must be duly regulated, and in the Order of Nature, towards the Preservation of Health, and the prolonging of Life.

The First ought to be of a due Consistence between both Extremes.

"Oportet Sanorum Sedes esse figuratas."

(The Gross Evacuations ought to be of such a Consistence in the Healthy, as to take the Impression of the Guts).

Those who are costive, have either over-heated their Bodies with strong Liquors; have eaten too sparingly; have too slow a Digestion, or the Peristaltick Motion of their Guts are too weak, whereby the Food staying too long a Time before the Mouths of the Lacteals, is over-drained of its Moisture.

Those who have purging Stools, have eat too much, or of Things too strong for their concoctive Powers.

For superfluous Nourishment leaves too much Chyle in the Faeces (The Food, after it is drain'd of its Nutritious Parts), which fermenting in the Guts, stimulates them so as to become a Purge. I have often observed, that a full Meal of strong Meat, Beef, Pork, Baked Meat, or made Dishes, in tender Persons, goes off with the Hurry and Irritation of a Purge, leaving the Bowels inflated, colicked, or griped, and the Spirits sunk to the last Degree.

The Food, by its various Mixture, Weight, and Fermentation, stimulating all along from the Stomach to the Rectum, and being scarce ever drained of its Chyle, without affording any Nourishment to the Body, runs off thus crudely, and becomes equal to a total Abstinence from Food for a long Time.

And hence we have a most infallible Rule, à posteriori (After the Trial has been made), to judge if we have governed ourselves in our Diet in Proportion to the Necessities of Nature, and the Forces of our concoctive Powers.

This is the very Reason why the Bark over-dosed, and given to Persons of weak Digestion, so constantly purges them; and why mercury, given either inwardly, or

by Friction, runs off in violent purging, and cannot be raised into a Salivation; to wit, the not adjusting the doses to the Strength of the Stomach and nervous Fibres.

For the Bark naturally binds, and Mercury naturally rises to the most pervious Glands.

And in this Sense, I myself have frequently observed in weak and scrofulous Bowels, even Diascordium, and Venice Treacle to purge: Whereas, had the Doses been duly proportioned, or had they begun by Underdosing, and taken a little longer time, their end might have been effectually answered; as I have often experienced without ever failing.

And here it may not be amiss to take Notice of a fatal Mistake those run into, who, being weakly, thin, and slender, aim, by all Means, and at any Price, to become plump and round.

And in order to attain this, are perpetually devouring huge Quantities of high, strong Food, and swallowing proportionable Measures of generous Liquors, not knowing, that by this very Method, they promote and confirm the Disease they would remedy.

For in such Persons and Cases, the globular Part of the Blood is constantly of a small quantity, and very glewy, and the serous Part, thin and watry (that is, The Blood is poor and weak) and the Solids or Nerves are loose and relaxed.

And the concoctive Powers being in Proportion to these two, of Consequence, the Digestions must be weak and imperfect, and their force unable to dissolve and break any quantity of such strong Meat or spirituous Liquors into a proper Chyle for Nourishment.

And this great Load must either be hurried off entirely through the alimentary Ducts in supernumerary Discharges, or the small Portion of Chyle drawn out of it, being too gross to unite and make a similar Fluid with the Mass of the Blood, must be precipitated through the other Drains of the Body; and thus the poor thin Creature must starve in Luxury, and waste amidst Superfluity.

The Case is the same with Nurses and Parents in rearing up Young Children.

The perpetual Gripes, Colicks, Loosenesses, hard Bellies, Choakings, Wind, and Convulsive Fits, which torment half the Children of England, are entirely owing to the too great Quantities of too strong Food, and too rank Milk, thrust down their Throats by their over-laying Mothers and Nurses.

For what else do their slimy, their gray or chylous, their blackish and cholerick Discharges, the Noise and Motion in their Bowels, their Wind and Choakings, imply, but Crudities from superfluous Nourishment?

This is so certain, that they are universally, and infallibly cured by testaceous Powders, which only absorb sharp Crudities, by Rhubarb Purges, which at once evacuate and strengthen the Bowels, and by Milk-Clysters, Issues, and Blisters, which are still upon the Foot of Evacuation: by obstinately persisting in these, and the like (intended to evacuate and strengthen the alimentary Passages) and a thin, spare, and nutritive Diet.

Nothing nourishes but Food duly concocted; and in the Course of Nature, we must first plump up and extend, and then harden and strengthen.

This is the Way of Nature in Vegetation. And thus the Animal Creation, devoid of Reason, rear up their Young: And thus even the skilful Groom treats his wasted and decayed Horse.

And (which is wonderful) you shall find a sagacious Horse Doctor plump up and fatten a rotten, lean, broken-winded Jade, and make him look sleek, gay, and lively, so as to cheat not only the Esquire, but his Brother Doctor, in fewer Weeks, than all the Man-Doctors in England could rear up their Fellow-Creature, in Years.

'Tis true, The Juices of Men are more variously, and more throughly corrupted, and their Solids entirely broken, which never happens to the Brute-Creation.

But the greatest Mistake lies in the Neglect of duly observing, and religiously prosecuting a proper Regimen.

This must principally consist in a Diet of soft, light, tender, cool, and mucilaginous Foods, or such as are already become Chyle, either by Nature or Art, such are Milk, and Milk-Meats.

Rice, Sago, Barley, Wheat, Eggs, Broths, light Soops, Jellies, white, young, tender, and well-fed Poultry, or Butchery Meat, eaten little at a Time, and often, never without an Appetite, nor to Satiety; joining to these, the other Helps and Assistances mentioned in this Treatise.

When Flesh is once come, 'tis easy to make it strong and hardy, by due Exercise, and a gradual adventuring upon higher Foods, and more generous Liquors.

I have often heard valetudinary, and tender Persons, and those of sedentary Lives and Learned Professions, complain of Head-aches, Sicknesses at the Stomach, Colicks and Gripes, Lowness of Spirits, Wind and Vapours, and yet pretend they were very moderate and abstemious in their Eating and Drinking.

But, upon Enquiry, I constantly found these very Persons pursued with purging Stools, which was an evident Proof, to me, that they had taken down more than they wanted, or could digest.

For 'tis universally certain, That those that do not exceed, must have either Costive, or, at least, Stools of a middle Consistence.

There is nothing more ridiculous, than to see tender, hysterical and vapourish People, perpetually complaining, and yet perpetually cramming; crying out.

They are ready to sink into the Ground, and faint away, and yet gobbling down the richest and strongest Food, and highest Cordials, to oppress and overlay them quite.

Fresh and generous Food, mixing with the sharp Humours of the Stomach and Bowels, may, for some short Time, qualify and abate their Irritation, and may give a Fillip to the sluggish Circulation, and become, as it were, a Cork to stop the perpetual Fuming up of these noxious Steams upon the Head and Brain.

But this is (pardon the Similitude) as if one should go to quench the pestilential Steams of a Common-Shore, by throwing in greater Heaps of Ordure and Nuisance into it.

The proper Remedy in this Case, is, First, To cleanse the fetid Abyss, and then to preserve it clean by cutting off all the Inlets of Putrefaction.

This will require a little Courage, Labour, and Pain; but the future Ease and

Sweetness, will more than abundantly recompense them; for there is nothing more certain, than that of those born sound here in England, the Headaches, Stomach-aches, Colicks, and nervous Pains and Disorders, universally proceed from Idleness and Fulness of Bread.

Those who eat but one moderate Flesh Meal a Day, will have regularly once a Day a Discharge of the Remains of their Food.

And, generally speaking, those that go oftner, have exceeded some how.

Those who pretend to cure themselves of nervous Disorders, or any other chronical Diseases, or preserve themselves from them, or lengthen out their Days, must under dose themselves (and therefore can go but once in 2 Days) even though they should undergo the Pain of Costiveness.

For 'tis impossible the Nerves of those who have slippery Bowels, should ever be braced or wound up; for there the Cure must begin, where the Evil began; and must be communicated thence to the rest of the System, as a Ropemaker begins the Twist at one End of the Rope, and communicates it to all the other Parts.

Our Access to the Nerves of the Stomach and Bowels, is obvious and open:

To the rest, the Way is difficult, and far about.

And since a Relaxation, Weakness, and want of Spring in the Fibres, is the Origin of all nervous Distempers, no Medicines, but such as contract, stiffen, wind up, and shorten them, can remedy this Evil; and they must necessarily contract and bind up the Fibres of the Stomach and Guts, as the Parts they first approach and exert their Virtue upon.

And he, who without firm Bowels, thinks to cure a nervous Distemper, labours as much in vain as he who would keep a Fiddle-string soaking in Oil and Water, to make it vibrate or play off a fine Composition of Music.

By Experience and Observation I have found, That in those who have 1 regular Discharge in 24 Hours, the Time of the Progress of the Food from the Stomach, till its Remains are thrown off, is 3 Natural Days.

And in those who go but once in 2 Days, the Time is 6 Natural Days.

The Curious may be satisfied in this, by swallowing an Almond or any other Nut, which passes without being broken or making any Irritation.

The Reason is this, That a smaller Quantity of Food is retained longer, by their Suction, at the Mouths of the Lacteals, to drain it entirely of its Chyle, and its Weight being less, the Concoctive Powers have the greater Force upon it, and so it is retained till it is perfectly Digested, and drained of all its Humidity; whereby such People become Costive.

Whereas in People that exceed, the contrary Causes precipitate the Course of the Aliment, and so leave the Bowels always slippery.

And nothing can more demonstratively shew an Excess, than the Lubricity of the Discharge.

And I have often, observed in tender Persons, and those of weak Nerves, when a Meal (I mean only of those who eat Flesh Meat only once a Day) has been a little too hard for the Stomach, tho the Spirits have been full and free, and the Health equal and good, by duly proportioned Meals for 2 preceding Days; the 3 Day,

when the gross Meal came off, they have been full of Wind and Vapours, their Eyes dim, and their Heads heavy, with flying Rheumatick Pains over the Body, and Colick-Gripes.

From whence we may draw these 3 Corollaries

Corollary: a direct or natural consequence or result

Corollary 1 - It requires the same Time for the unconcocted Chyle of a gross Meal to run the Circle of the Habit, and the feculent Remains to pass thro' the Guts; the First by Perspiration, and the Last by Siege (stools).

Corollary 2 - We may likewise gather from thence, a Confirmation of that Aphorism of the Physicians; That the Errors of the first Concoction, are never mended in the subsequent, unless the Case to be mentioned in the next Paragraph be an Exception to it. For the gross Meal gave rather more Uneasiness, when it came to be thrown off by Perspiration.

Corollary 3 - From hence we may also see, the Ridiculousness of the Vulgar Opinion, ascribing universally the Pain they suffer, or the Relief they find, to the last Meal or Medicine.

Chyle: A milky fluid containing fat droplets which drains from the lacteals of the small intestine into the lymphatic system during digestion.

There are some sorts of Food which may oppress and load the Stomach, and Alimentary Ducts in the first Concoction, which may be very safe and benign in the subsequent ones.

For instance, Cheese, Eggs, Milk-Meats, and Vegetable Food, tho' duly prepared, and justly proportioned in Quantity, may chance to lie heavy on the Stomach, or beget Wind in the Alimentary Passages of some Persons (and yet drinking of Water will always remedy this Inconveniency).

But these neither having their Parts strongly united, nor abounding in sharp Urinous Salts, when they become sufficiently diluted with a watry Menstruum, or dissolved into their Component Parts, and their Parts being still smaller than the smallest Vessels, and their Union constantly less, than the Force of the Concoctive Powers, in Persons who have any remaining Fund of Life in them; will thereby yield a sweet, thin, and easily Circulating Chyle, in the after Concoctions become benign and salutary, and afford no Materials for Chronical Distempers.

And the Wind thence generated, not being pointed and armed with such sharp Salts, as those of Flesh Meats, or the Corrosive Juices of Spirituous Liquors, will be as innocent and safe, as the Element we breathe in.

The Second Evacuation is by Water, whose Circumstances and Condition, tho -little adverted to, may be of great Service to discover both the State of our

Constitution, and the Proportion of our Diet.

Some People are frightened when they find their Water turbid, broken, and full of Brick-dust Sediment; whereas that is the best Symptom it can have.

For tho it supposes the Blood loaded with Urinous Salts and Cradities; yet tis still better they should pass off than continue in the Habit. On the contrary, when those that live freely, have Quantities of pale, limpid and sweet Water, tis a certain Sign that the Perspiration is stopped; that neither the First nor the Secondary Concoctions have been duly performed; that the Chyle has not been sufficiently broken, nor the finer Secretions duly made by the lesser Drains; and that the Urinous Salts are still retained in the Habit.

Upon which must needs ensue Oppression of Spirits, Chills upon the Extremities, flying Rheumatick Pains over the Body, Head-aches, Cholicks and Gripes.

And here it may not be amiss, to take Notice of the Difference of the pale Water of Hypochondriacal and Hysterical Persons, from that of those who labour under a true Diabetes, the Apprehension of which terrifies so often the Low and Dispirited Persons of the First Class.

The Water of both has the same Appearance, both in Quality and Quantity, at least, in the first Instance, they are both attended with the same Sinking and Dispiritedness.

But in a true Diabetes, there is a constant Thirst, a low but quick Pulse, the Water is much sweeter, and continues longer to come off in profuse quantities, insomuch, that sometimes it is so violent as to run down the Party in a few Days.

In Hypochondriacal and Hysterical Persons, there is little or no Thirst, never a quick Pulse, but rather too low and slow a one, the Flux soon stops of itself, or by any little Diaphoretick Medicine, and they are cold upon the Extremities, which the others are not.

That bluish and variegated Film, which sometimes looks like Oil and Fat swimming on the Water of Scorbutick and Cachectick Persons, is nothing but the congregated Salts which are crowded so thick together, that they are ready to shoot into Clusters, much like the Film of a Lixivium (a solution as Lye), when standing for the Crystallization of fixed Salts.

The Water which has a light Cloud hanging almost from the Top to the Bottom, is of a bright Amber Colour, and about 3 Quarters of the Liquor taken down, is best, and a certain Sign of a due Concoction, a just Proportion of Food, and a total Absence of Repletion and Crudity.

And those who live Temperately, use due Exercise, and enjoy a perfect State of Health, always make such Water.

Those who are subject to great Quantities of limpid and pale Water, ought to conclude, that their Food has been too heavy in Quality, or too much in Quantity for their Concoctive Powers, or their Labour too little; and that therefore, they ought to proportion both, for the future, with more Caution and Exactness, by living low for some Time, or using more Exercise.

And to stop their Flux of pale Water, they ought to take a little Gascoign's

Powder, Confection of Alkermes, or Sir Walter Raleigh's Cordial at Night, and drink liberally of small warm Sack Whey, with a few Drops of Spirit of Hartshorn, to set the Perspiration in order again.

Those, on the other Hand, who make high-colour'd, foul, and very turbid Water in smaller Quantities, have either inflamed their Blood too much, with Spirituous Liquors, or loaded it with too great a Quantity of Animal Salts.

To prevent therefore Disorders and Diseases, they must lessen the Quantity of their Flesh Meat, and temper the Heat of their Wine with Water.

Else they will lay the Foundation of some Acute Inflammatory, or dangerous Chronical Distemper.

The worst kind of Water of all, is that of a dark Brown or dirty Red, in a small Quantity, and without any Sediment.

This kind of Water, in Acute Diseases, always indicates insuperable Crudity, high Inflammation tending towards Mortification, and a dying Languor in Nature.

And in Persons labouring under no visible Distemper at the Time, an almost total Debility of the Concoctive Powers, an inseparable Union of the Constituent Parts of the Blood, the highest Degree of Crudity, and a Deadness in all the Animal Functions.

And, if preceded by long continued Excesses, requires the Advice of a Physician.

I shall say nothing of Coffee-colour'd, Bloody, Wheyish, or Purulent Water, or that with white Gravel, Films, Rags, or Bits of broken Membranes.

They are well known to be Nephritick, or Symptoms of an Ulcer somewhere in the Urinary Passages.

There happens also an Evacuation both by Siege (stools) and Urine, to some weak Persons of relaxed Nerves, that extremely alarms the Patient, and is not so readily accounted for in common Aetiology (That Part of Physick which teaches the Causes of Diseases).

It is when either a white transparent, viscid Substance, like Gelly, is constantly voided by the Bowels, more or less; or when a white, milk, glewy Substance, like Cream or laudable Matter, settles in the Water.

Both these Appearances are commonly ascribed to an Ulcer in the Guts, or in the Kidneys, the very Apprehension of which is almost sufficient, in some low Persons, to bring on the Distemper feared.

And yet I am very certain there is neither Ulcer nor true Matter in either Case, as I propose them.

For where there is violent and acute Pain, or Matter of different Colours or Mixtures, there, very possibly, may be, nay, certainly there is, an Ulcer.

But in the Case I here intend, there is very little or no Pain, no Hectical Paroxysms, which always attend an inward Ulcer; no bloody or sanious Mixtures, which always betray the inward Sore; no fetid Smell to imply Corruption.

For the Cases I put at present, happen to Persons the least capable of Inflammation or Imposthumation, viz. to paralytic Persons, or those of a Natural Tendency that Way, to cold, vapourish Persons of low Spirits and weak Nerves,

whose Pulse is low and slow, and their natural Functions weak and languid; all which evidently shew, that these Discharges cannot come from an Ulcer.

The first case I take to be either an Obstruction of some of the Lacteals, whereby the Chyle cannot be carried off in any sufficient Quantity, but passing through the Guts, and its more Watry Part being evaporated, it becomes thick and gelatinous, and is thrown off at last with the Remains of the Food.

Else it must be an Obstruction of those Glands of the Guts, by which a viscid Matter for lubricating of them, is commonly secerned; by the Imprisonment and Evaporation of which Matter, it thickens and turns like a Gelly (as it does by Cold, or Overfeeding, in the Glands of the Mouth, Throat and Windpipe) and at last, by the Squeezing of the Guts, is thrown off.

And in the same Manner, I take that Milky Substance subsiding in the Water, in such a Case as I have mentioned, to arise from a Relaxation of the Glands of the Kidneys and Bladder, and other Urinary Passages; and that both are to be cured the same way other Nervous Distempers are cured, viz by a proper Regimen of Diet, and a Course of contracting, strengthening, and volatile Medicines.

The insensible Perspiration is the Third Evacuation to be considered.

'Tis certain, however, that the free and full flowing of this Evacuation, is as necessary to Health as any of the grosser, since in Quantity it is at least equal to both the forementioned; and an Obstruction thereof, is generally the Source of all acute Diseases, as it is a Consequence of all Chronical ones.

And thereby obstructing, not only the Perspiration, but also all the other finer Secretions, raises immediately a small Fever and a Tumult in the whole Animal Economy; and, neglected, lays a Foundation for Consumptions, Obstructions of the great Viscera, and universal Cachexies.

The surest Way of maintaining and promoting a due Perspiration, is, To take down no more Food than what the Concoctive Powers are sufficient to reduce into a due Fluidity, and the Expences of Living require, to prosecute necessary Exercise.

Want of due Rest and the Refreshment that follows upon it, starting, tossing, and tumbling abed, are certain Signs that the Perspiration is not duly carried on in the Night Season. And therefore, in order to remedy this, a greater Proportion of Exercise, a greater Degree of Abstinence, or some gentle domestick Purge, must be had recourse to the next Day.

Colical Pains, Gripes and Purging, much Eructation and Belching of Wind, Low Spiritedness, Yawning and Stretching, are infallible Signs that the Perspiration flows not freely and plentifully then. And therefore the same Remedies ought to be prosecuted, as soon as an Opportunity offers; else the Party will suffer at last. Wind, as Sanctorius observes and demonstrates, is nothing but obstructed Perspiration. And Yawning and Stretching, are but Convulsions of the proper Muscles and Organs appointed by Nature, the one for Pumping up Wind from the Bowels, the other for pressing upon the Excretory Ducts in the Skin, to force out the sluggish perspirable Matter.

And 'tis beautiful to observe, how wisely Nature has contrived the Sposms,

Cramps and Convulsions of the proper Organs, to expel every noxious and extraneous Body out of the Habit.

Thus Coughing is a Convulsion of the Diaphragm and Muscles of the Breast, to throw out viscid Phlegm; Vomiting, of the Stomach, (assisted by the Diaphragm and Muscles of the Abdomen) to throw up its Crudities, and those of the Bowels; or to expel Sand or Stones from the Kidneys.

The Throws of Labouring Women, are to bring off the Burden.

Sneezing is an Effort of the proper Muscles, to eject some noxious Particles from the Organs of Smelling.

Shivering and Stretching to assist Perspiration; and Yawning to pump up noxious Wind. And even Laughing itself, is an Effort of the Muscles of the whole Trunk, to throw off something that its delicate Membranes cannot bear. And, Lastly, Hysterical Fits and Convulsions, both in Infants and Persons come to Maturity, are but violent Efforts, Struggles, Workings, Cramps and Spasms of all the Muscles of the whole Body together, to expel, squeeze, and press out the sharp Acrimonious Wind.

Fumes and Vapours from the Cavities of the whole Machine.

There is an Evacuation incident to Persons of weak Nerves, which could not conveniently come in under the general Division, because it happens too seldom to make a new Member of it.

It is a Discharge of thin Rheum from the Glands of the Mouth, Throat and Stomach, and is called by some, a Nervous or Scorbutick Spitting.

It rises sometimes to the Heighth of a "petit Flux de Bouche" (small mouth flow), as the French call it, and threatens some tender Persons, as they apprehend, with a Consumption, though it imply nothing less.

We may observe some, who are struck with a deep Palsey, to flow at the Mouth, and drivel down their Breasts; insomuch, that the Afflicted of this Sort, who are advanced in Years, can scarce speak intelligibly for the Flux, till they have first emptied and cleaned their Mouths.

And this arises to so great a Heighth, in some much broken paralytick Persons, that upon the slightest Occasions, either of Joy or Grief, they are apt to run into a Profusion of Tears, Sighs and Sobbings.

And some sorts of Ideots, and those Hysterically mop'd, and most of those who suffer from relaxed and weak Nerves, are more or less subject to these Salival Discharges, especially after Excesses in Diet.

Hence the first Sort receive the Appellation of Snivellers or Drivellers.

And the Difficulty of the Cure of all the Diseases of weak Nerves, depends much on the Quantity and Constitution of this Flux.

For much and long Spitting and Running off of this Rheum, implies a total Relaxation of the whole Nervous System, and shews neither the first nor second Concoctions have been duly performed.

I have frequently had Occasion to shew, how Excesses in the Quantity or Quality of the Food, in Persons of relaxed and weak Nerves, begot a viscid and gross Chyle, of which that Part, which could not get through the Lacteals, lay

fermenting and putrifying in the Alimentary Passages, begot Wind, Gripes and Colicks, and at last wrought itself off like a Purge.

And that that Part, which got through the Lacteals, and was received within the Limits of the Circulation, being too gross and glewy to be mixed with the old Mass of the Fluids, to circulate through the smallest Vessels, and to enter the fine Perspiratory Glands, would necessarily be thrown into the wider, more spongy and loose Salivary Glands, which are appointed by Nature to secern the more Glutinous Parts of the Fluids.

And from thence this Salivary Inundation proceeds?

The Fact is, When those of weak Nerves, commit habitual Excesses in their Diet, the Glands and small Vessels of all the Body are tumified, swelled and obstructed thereby, as they needs must be.

And 'tis from the Pressure of these inlarged Glands, and the obstructed capillary Vessels on the Nerves, and patent Blood Vessels, that most of the Evils they suffer under proceed. But more especially, are the Glands appointed to draw off the more viscid serous Part of the Blood, obstructed and tumified thereby.

Upon which Account, as Baglivi advises to enquire well into the State of the Tongue and Mouth, in order to discover the Condition of the Stomach, Guts and Bowels.

So I think 'tis highly reasonable in a Chronical Case, to have great regard to the Condition of the Eyes; and if a dead, cold Languor be observed in the Hue or Water of them (as Jewellers speak of Diamonds) and more especially if the lachrymal Gland in the Corner next the Nose, which I always narrowly inspect. If, I say, this Gland be found harder, or larger than ordinary, swelled and tumified, it must certainly be concluded, whatever else be in the Case, there must be a relaxed State of Nerves, much Vapours, weak natural Functions, and a mismanaged Regimen. And it is from the Obstruction and Swelling of this and the other Glands, in and about the Eyes, and their Pressure upon the Optical Nerves, and fine Blood Vessels, that those Spots, Flies, Atoms, Dimness, Darkness, and Confusion of Sight, in Vapourish and Hysterical People proceed.

For this Gland shews, that the whole serous Glands in the upper Regions of the Body are, in Proportion, tumified and swelled with viscid Humours through Excess of Diet; unless the Person have suffered there by Accident, or labours under some natural Disorders of the Eyes.

From the Obstruction and Swelling of the Salivary Glands in the Mouth, Throat and Gullet, proceed also those Choakings, Gulping and Strangling, that Hysterick Persons so often complain of.

The Wind and Crudities lodged in their Stomach and Guts, and the rest of the Cavities of the Body pressing to get vent upwards, are resisted and stopped in their Passage by the Diaphragm, whereby the Inspiration is straightened, and by the Bulk of these Glands throughout the Gullet, the Way is entirely stopped; which raises such a Tumult and Struggle, as produces the mentioned Symptoms;

which I have not Leisure to detail here more minutely.

Now this Salivation or Discharge of the thinner Rheum, and that Coughing and Hawking of more viscid Flegm, commonly called a nervous Cough, as also the Chincough of Children, and all such Discharges of sharp Serum in Persons of weak and relaxed Nerves, is an Effort of Nature to relieve them. And, if discreetly managed, and duly heeded, would prove a Crise to their Disorders, and quite free them from their present Paroxysms (The sharpest Part of the suffering Fit of a Disease), and set the Circulation and Perspiration, and consequently the Spirits, at Freedom and Liberty again.

Some Persons most distractedly run to Drams and Cordials to remedy this Evil, to stop the Violence of this Deluge, and to raise their drooping Spirits.

But it serves only to thicken the Flegm, shut up the Mouths of the Salivary Glands closer, and so to perpetuate the Evil they mean to cure.

Others devour large Quantities of high and generous Foods, because they find a little Relief to their Spirits, from the first Run of the sweet, thin, and spirituous Chyle: But this is only adding Fewel to the Fire, and running on in a perpetual Round of Lowness and Slavering.

Whereas, would they suffer Nature to act her own Way, to carry on this critical Discharge as far as it will go, without offering in the least either to check or promote it. But by thin, light Food, and cool Liquors, in moderate, or rather under dosed Quantities, support her in the manner the Concoctive Powers are sufficient for. After she had discharged all the Crudities from the Mass of the Fluids, by these Emunctory Glands, and thereby given a free Passage to the Wind to escape the Way it tends, the Salivation would lessen gradually, and at last stop of itself.

And if then towards the Decline, a gentle Vomit, to pump up the slow and viscid remains of the Wind and Flegm in the Upper Part of the Alimentary Passages, and afterwards a gentle Stomachick warm Purge, to scour the Lower Part of these Tubes, were carefully administred; the Patient would soon find a clear Head, lightsome Spirits, Ease and Freedom from Pain and Oppression; the Circulation and Perspiration would be soon brought to their natural and sound State, and Health and Cheerfulness restored together.

Unless a mortal or habitual Ptyalism (Spitting) was the Case, which I have sometimes observed, as fatal and incurable as a true Dropsy, or inveterate Diabetes; all which owe their Being to a deep Scurvy, whereby the Globular Part of the Blood is entirely broken, and the Serum made a meer Lixivium or Lye.

Rules for Health and Long Life, drawn from the Head of Evacuation

1. Costive Stools are Signs of over-heated Blood, too spare Feeding, Slowness of Digestion, or Weakness of the Guts.

2. Purging Stools shew intemperate Feeding.

Too full a Meal has the Effects of a Purge, fills the Guts with Wind, and gives Gripes. Mercury, and even the Bark, Diascordium and Treacle, if over-dosed, purge.

3. Head-aches, sick Stomachs, Vapours, low Spirits, Gripes and Colicks, proceed from Cramming; and are ever accompanied with loose Stools.

4. Those that live temperately, have 1 regular Stool a Day. Those who have more, exceed.

5. **The Cure of all Relaxations of the Nerves (the Source of Chronical Diseases) must necessarily begin at the Stomach and Guts.**

6. A gross Meal produces more Disorders, the Day the Excrements of it go off, than the Day it is eaten.

7. A Meal takes the same Time to get through the Habit by Perspiration, that its Remains do to pass through the Guts.

8. Pain or Relief, is not always the Effect of the last Meal or Medicine, that was taken down.

9. There is great Difference between Hysterick pale Water, and that which proceeds from a Diabetes.

10. That Appearance of Fat on the Urine of some People, is nothing but a thin Film of Salts.

Bright Amber-coloured Water, with a light Sediment rising toward the Top, amounting to three Quarters of what is drank, is a Sign of good Digestion.

11. Great Quantities of pale Water proceed from Excess in the Quantity of Food, and want of Exercise. The Cure of it is performed by eating less, using more Exercise, and taking some Diaphoreticks, to set the Perspiration right.

12. High-colour'd turbid Water in small Quantity, shews abundance of Animal Salts in the Habit, or the immoderate Use of Spirituous Liquors: And must be cured by vegetable Food, and Water, or other small Drink.

13. Dark brown Water, or of a dirty red, is extremely dangerous, both in acute Cases, and in those that seem at present to ail nothing.

14. Bloody purulent Water, and full of Films, is a Sign of Nephritick Ailments, Stone and Gravel.

15. The viscid Matter like Gelly in the Stools, and the viscid milky Substance somewhat like Matter in the Urine of some People of weak Nerves, proceed from a Corruption of the Liquor of the Mucous Glands of the Intestines, and of the Bladder, and other Urinary Passages.

16. Obstruction of Perspiration is one Source of acute Diseases, and a Consequence of chronical ones.

17. Catching of Cold is an Obstruction of Perspiration, by the humid and nitrous Particles of the Air. It should be cured by gentle Diaphoreticks, and Balsamick Pectorals, to promote Expectoration from the Lungs.

18. Persons of weak Nerves, have often a critical Flux of Rheum from the Glands of the Mouth and Throat, to a very large Quantity, which, if not tampered with, brings them great Relief." - George Cheyne, MD, FRS, in "An essay on Health and Long Life", 1724.

Chapter 9

Lymph & Emunctories

"Operations which merely go "wide of the disease" do not meet the necessities of the case. We have not yet sufficiently realised that ***the surgery of malignant disease is not the surgery of organs: it is the anatomy of the lymphatic system.****" - Lord Moynihan, MD, FRCS, in "Surgery, Gynecology & Obstetrics", 1908.*

"The system of lymphatic vessels is one of tubes co-ordinated with and, to a certain extent, complementary to the blood vascular system. It is present only in vertebrates and consists in the higher orders of a network of closed lymph capillaries and efferent lymphatics. In this system of tubes is flowing a fluid -
the lymph - which, as Drinker and Yoffey put it:

"Is on its way from and to the blood".

The passage of lymph from the lymph capillaries through the collecting
and efferent lymph trunks and its drainage into the large veins is only a part of this circulation.

1. The process begins, with capillary filtration where water and dissolved substances escape from the blood capillaries, and pass into the interstitial space.
2. The second step is the diffusion of the fluid in the interstitial space among the fibres of connective tissue, its mixing with extracellular fluid and arrival at the wall of the lymphatic capillaries.
3. In the following phase of this circulation the fluid leaks through the wall of the lymphatic capillaries, and so passes into the system of closed collecting
tubes, the lymphatics, whence it returns to the blood vessels.

It is in this sense that the term "lymph circulation" is understood, although, in the stricter sense of the word, we call lymph only the fluid which has already gained access to the lymphatics, capillary filtration and diffusion in the connective tissue also contribute to the formation of this lymph."- Dr István Rusznyák, MD in "Lymphatics and Lymph Circulation, Physiology and Pathology", 1967.

The Lymph Its Function and Role in the Protection of the Body

The Anatomy and Physiology of Lymphatic Circulation

"The lymphatic system, a complex network of ducts and nodes diffused throughout the human body, exhibits considerable variation that is comparable to other anatomical structures such as the arterial or venous system.

Excess of interstitial fluid is returned to the blood circulation via the lymphatic system. In contrast to the blood circulation, lymph flow is unidirectional, away from the different tissues.

Lymph is similar to blood plasma and contains immune cells as part of the defence against microorganisms.

Furthermore, lymphatic capillaries in the intestinal villi absorb the fats and fat-soluble vitamins that give the lymph its milky appearance in this part of the lymphatic system." - Dr P. J. Tanis, MD in "The Anatomy and Physiology of Lymphatic Circulation", 2013.

The Barrier Function of Lymphoid Tissue In Health

"The designation "lymphoid" is applied to a complex of tissues scattered throughout the body.

Clinician and pathologist have repeatedly observed that lymphoid tissues are often the seat of secondary inflammation or malignant deposits.

Lymphoid tissue exists serving as a barrier which holds the spread of injurious matter. Thus, quite a small epithelioma on the back of the hand may cause metastases in the axillary lymph nodes. Once in the lymph nodes the metastases are then held in check. Had it not been, however, for the lymphatic vessels affording these metastases an easy and rapid pathway, they would never have been able to travel as far as the axilla, but would have remained strictly localized to the hand.

The gain from the barrier action of the axillary glands is more than offset by the dangerously easy dissemination made possible by the lymphatic vessels.

Similar considerations apply, mutatis mutandis, to the lymphatic spread of acute inflammation.

The lymphoid tissue found in the wall of the alimentary canal has been thought to be even more obviously defensive in function, lining as it does a hollow tube full of microorganisms. The same apply to the lymphoid tissue present in the lower end of the ileum and the appendix.

In old age the lymphoid masses (Peyer's patches) in the terminal ileum have, as a rule, completely disappeared." - Dr J. M. Yoffey, MD, FRCS in "The Problem of Lymphoid Tissue", BMJ, 10 December 1932.

Lymph in the Colon

"Carcinoma of the caecum is particularly apt to produce severe high-grade secondary anaemia, and this is probably due to the fact that ***the caecum has such a rich lymphatic supply. It is known that the lymphatic supply of the caecum and ascending colon is very much more rich than the lymphatic supply of the descending colon, and this probably has considerable to do with the absorption of toxic material not only from the growth itself, but through the ulcerated area from the caecum."*** *Dr Frank H. Lahey, MD, Dr Sara M. Jordan, MD in "Cancer of the Colon", The New England Journal of Medicine, 2 June 1932.*

Lymphatic Obstruction in the Pathogenesis of Intestinal Mucosal Atrophy

"The most striking changes were microscopic structural alterations of the jejunum and ileum in test animals. In the jejunum, a progressive decrease in villous height was noted. The most severe changes were at 10 months.

The villi were shortened and thickened. Almost all the villi had dilated lacteals. In some specimens, the crypts appeared to be widened.

No consistent changes were demonstrated in cellularity of the lamina propria or in other layers of the jejunum.

Lymphoid accumulations were markedly increased in the mucosa and submucosa of both jejunum and ileum.

Accumulation of lymphocytes in mucosa and submucosa is frequent in regional enteritis (Regional Enteritis of the Colon, JAMA, 4 Sep., 1967).

Micro ulcers of the mucosa may often be seen overlying these lymphoid aggregates. Observations show a relationship between lymphatic obstruction and mucosal atrophy.

Non-Inflammatory Lymphatic Obstruction

Major alterations produced were hypoalbuminemia, small intestinal mucosal atrophy, lymphocytes depletion in lymph nodes, and increase in lymphoid accumulations in the mucosa and submucosa of the bowel.

These experimentally produced structural alterations of intestinal mucosa resemble to various degrees intestinal changes found in many idiopathic malabsorption syndromes in man.

Lymphatic obstruction is suggested as a component in pathogenesis of intestinal atrophy." - Dr Jay C. Fish, MD, Dr Linea McNeel, BA, Dr William J. Holaday, MD, in Annals of Surgery", March 1969.

Pathologic Basis of Disease

"The lymphatic system is formed by a network of vessels, nodes, and specialized organs that are vital in maintaining both localized and systemic immunity. **Lymph nodes are the first place where lymphocytes are exposed to foreign antigens,** leading to the production and dissemination of antigen-specific T-lymphocytes and plasma cells. By delivering immunocompetent cells to sites where they are needed through the lymph, locally initiated immunity becomes generalized." - in "The Anatomy and Physiology of Lymphatic Circulation", Radioguided Surgery, 2008.

> *"The lymphocyte is a young and actively growing cell. It has enormous developmental potentialities, as shown in tissue culture experiments. Like other actively growing cells it is extremely sensitive to radiation." - Dr J. M. Yoffey, MD, FRCS in "The Problem of Lymphoid Tissue", BMJ, 10 December 1932.*

The Bactericidal Action of Lymph

"Nine years ago Nuttall (Nuttall, Q.H.F. 1888, Experimente uber die bacterienfeindlichen Einflusse des thierischen Korpers. Zeitschr. f. Hygiene, iv. 353), first described the bactericidal action of the blood, suggesting at the same time that the other fluids of the body may possess a similar action.

He found later that the aqueous humor, pericardial fluid, and a pleuritic fluid poor in cellular elements also possessed bactericidal power. Prudden (Prudden, On the Germicidal Action of Blood Serum and other Body Fluids. Medical Record, 25 Jan. 1890) determined that ascitic fluid, fluid taken from a hydrocele, and the liquor amnii of the pig had the same properties.

Flexner (Journal of Temperamental Medicine, I, 576) found that the blood serum of the human placenta was not distinctly germicidal for the Staphylococcus aureus, but was germicidal for the Bacillus typhosus.

A controversy having lately arisen as to the channels of absorption of serous fluids, it seemed to us a matter of importance to determine whether lymph from the thoracic duct possesses bactericidal powers.

The possibility was present that an ex change of the bactericidal factors between the blood and lymph, lymph from the interstitial spaces, might occur only through the walls of the blood-vessels.

From a scientific point of view it seems important to determine accurately whether lymph, as well as blood, is germicidal.

Nissen (Nissen, Zeitschr. f. Hygiene, vi, 488) furnishes a statement showing the bactericidal power of the blood on Bacillus prodigiosus. Original plate 3000 to 4000, after 3 hours 2800, after 5 hours 10,200, after 20 hours innumerable.

According to this result blood can hardly be considered to have much

germicidal action on this bacillus. In regard to the Staphylococcus aureus, most authors have found that its growth is but little impaired by normal blood, but Flexner (p.574) has demonstrated that normal human blood serum may exert decided germicidal action upon this organism.

Buchner (Buchner, Centralbl. f. Bakteriol., v, 821) mentions that the Bacillus pyocyaneus and a bacillus of the typhoid group cultivated from the faeces are among the most resistant of the bacteria which he studied, to the action of blood serum. In our investigations the typhoid bacillus was alone tested.

This bacillus had been tested by most of the observers working on the germicidal power of the blood, and our main purpose was to establish the presence or absence of any such power in the lymph. The methods employed by us were those followed by Nuttall and others and the method used by Buchner.

It was essential to obtain fluid lymph, as only in this condition can it be readily handled and measured.

A sterilized glass cannula bent at right angles is firmly tied in the thoracic duct.

The free end of the cannula is then inserted in the neck of a bottle containing glass beads, bottle and beads both having been previously sterilized.

After collecting the lymph the bottle is closed with a sterilized glass stopper and vigorously shaken for several minutes. The lymph remains fluid, is poured into test tubes and kept ready for use in an ice chest.

Our Results

We believe, justify the conclusion that lymph from the thoracic duct possesses marked germicidal action on the typhoid bacillus.

A noticeable decrease in the number of colonies in the lymph plates is observed, the decrease being the more marked the longer the exposure to the action of the lymph.

The decrease cannot be accounted for simply on account of lack of suitable nutrient material in the lymph, and for the following reasons:

1. The lymph bouillon plates show the same immediate decrease in the number of colonies as do the pure lymph plates, whereas the bouillon salt solution at once shows a marked increase in growth.
2. The addition of lymph produces a direct inhibitory action on the growth of the typhoid bacillus.
3. The germicidal action of lymph is destroyed by too long standing (19 days in Experiment O) and by heating for half an hour at 56°C.
4. The lymph after such treatment furnishes a good medium.
5. The action of the lymph is most apparent when the number of bacilli inoculated in the lymph is relatively small. (Compare Experiments F and P: in Experiment F, starting with 184, after 22 hours the plate is sterile; in Experiment P (Nuttall) with an overcrowded original plate a temporary relative diminution

alone is observed, growth soon beginning anew).

6. The quantity of the lymph must also be considered.

7. The greater the quantity of lymph with the same inoculation the more apparent does the action of the lymph be come.

The lymph possesses not merely an inhibitory action on the growth of the typhoid bacillus, but is definitely germicidal. We convinced ourselves of this fact by placing several of the sterile lymph plates in the thermostat. No growth was observed on any of the plates. On the other hand, we have seen lymph plates, which after 3 days growth at room temperature were sterile, several days later develop a few small colonies, the control plates usually obtaining their full growth in 48 hours.

The 5-hour plate in Experiment F furnishes an example.

After 53 hours growth it was sterile, 3 days later 20 colonies appeared.

On the whole, a retardation in the appearance of the colonies on the lymph plates as compared with the control plate was always noticeable.

The more resistant forms of the bacilli, i.e. those not destroyed by the lymph, were nevertheless inhibited in their growth. We believe, however, that the difference between partial and complete inhibition of growth is only a quantitative and not an essential one. The germicidal power of lymph is not much less than that of blood serum. In one respect a difference between lymph and blood serum was present in our experiments.

The bactericidal action of blood serum diminished and disappeared sooner than did that of lymph.

Perhaps blood serum furnishes a better medium for growth, and when the bactericidal property is exhausted the nutritive factors are enabled to gain the upper hand and thus determine a more rapid growth than with lymph.

During the course of our experiments the effect of room temperatures on the bactericidal action of lymph and blood serum was also noticed.

Nuttall says:

> *"The temperature at which blood specimens after inoculation are kept, appears, at least with rabbit's blood, between the limits of 19°C. and 38°C. to have little effect on the germicidal action."*

We have, however, obtained a different result.

This is evident in a comparison of the development of the germicidal action of lymph and blood in Experiment R, where blood serum or lymph kept at room temperature developed its germicidal power more slowly but retained it longer than blood or lymph kept at 37°C." - Dr S. J. Meltzer, MD, Dr Charles Norris, MD Physiological and Pathological Departments of the College of Physicians and Surgeons, Columbia University, New York, in "The Journal of Experimental Medicine", Vol.2, 1897.

The Spleen as a Bacterial Filter

The spleen is the largest organ in the lymphatic system.

"Among the more evident functions of the spleen is the removal by it of foreign particles carried in the blood stream.

The part which it plays together with the liver and the lungs in rapidly freeing the blood stream of microorganisms in cases of experimentally produced bacteriemia has been shown by several investigators.

The reasons which have been assigned for this action have in part been based upon the unique arrangement of the vascular system in the spleen, and in part upon the activity of phagocytic cells which are so numerous in this organ.

Thus Kyes ascribes the reason of the selective collection of bacteria in the spleen to some extent to the mechanical filtering action of the modified vascular wall of vessels in this organ, stating that:

> *"A mechanical filtration of the organisms by the walls of certain of the blood vessels was found to be an important factor in the rapid accumulation of the pneumococci within this organ."*

In a study (Bartlett, C. J., and Ozaki, Y. "The Journal of Medical Research, 1917", xxxv, 465) recently reported from this laboratory upon the fate of S. pyogenes aureus after its introduction into the blood stream of dogs the localization of the bacteria in the spleen and liver was shown, and especially in the former.

In the spleen most of the bacteria had been ingested by leucocytes and splenic cells, but they were also found in the pulp apparently lying between the cells without having been engulfed by these, a picture which suggests the filtration of bacteria by the pulp.

This microscopic finding induced us to attempt to determine the mechanism of bacterial accumulation in this organ.

The results of three experiments showed a more pronounced diminution of bacteria in the fluid after its perfusion through the kidney than was found in the case of the spleen. It is also striking that the kidney tested 4 days after its removal reduced the number of bacteria equally as well as did the fresh kidney.

From these results we can infer that the kidney is able to detain bacteria from the circulating fluid more readily than the spleen in so far as simple mechanical filtration is concerned. This finding seems to be rather surprising, inasmuch as the spleen readily stores up bacteria from the blood stream, while the kidney as shown by our previous results takes up scarcely any of them from the blood of the living animal. To explain this apparent contradiction we must conclude that the differences in the terminal blood vessels of the two organs give the advantage as a mere filter to the kidney, but that during life the greater attraction of the cells in the spleen for bacteria (by chemiotaxis or otherwise) enables it to detain them in much greater numbers.

Also that there is no doubt that the spleen tissue loses a great part of its vital activity very soon after the death of the animal or its removal from the living animal, though we endeavoured in these experiments to keep the organ alive by perfusing Locke's solution or bouillon at blood temperature, through its parenchyma." - Dr Y. Ozaki, MD, from the Department of Pathology, The School of Medicine, Yale University, in "The Journal of Medical Research", Vol. XXXVI, 1917.

"Of 1,200 patients with Low Grade Malignancy: lymph nodes were invaded in only 16%. Of 165 with High Grade Malignancy: lymph nodes were invaded in 96%." - Dr Frank H. Lahey, MD, Department of Surgery, The Lahey Clinic, Boston, Mass., in "The American Journal of Surgery", Nov., 1953.

Cancer Method of Spread

"Method of Spread of the Growth - **Cancer of the rectum, like cancer elsewhere, spreads by the lymphatics and by direct extension of the growth into neighbouring tissues.**

On the skin it has the ordinary appearances of a skin cancer.

The glands in the groin are early involved.

Cancer of the ampulla is generally first seen as a circular ulcer which spreads radially.Metastasis does not apparently occur early in the case of rectal cancer, and it is surprising for how long a large rectal growth can exist sometimes without metastatic deposits forming.

When metastasis does occur it is usually in the liver." - Dr P. Lockhart Mummery, FRCS, Surgeon, in "A Lecture on Cancer of the Rectum and its Treatment", The Lancet, 30 December 1911.

How Does Lymph Move?

"Anyone who has had to deal with the lymphatic system must have wondered at some time or other how lymph moves.

There would thus seem to be 3 mechanisms pumping lymph centrally:

1. Peripheral Muscular Pump: Acting similarly to the Soleal Calf Venous Pump.
2. Abdominal Pump: Rhythmically compressing the Abdominal Lymphatics.
3. Thoracic Pump: Compressing the contents of the Thoracic Duct.

To ensure that lymph is not pumped in a retrograde direction, unidirectional valves are essential, and are present at frequent intervals in all peripheral lymphatic trunks. Indeed valves would appear to be of much greater importance for the lymphatic system than for the venous system, where there is continuous flow of blood and a "vis-d-tergo" anyway.

In this respect the function of valves in both systems would appear to serve different purposes: in the lymphatics valves are essential for forward flow, whereas in veins they exist to prevent backflow on certain occasions only.

Certainly the numerical distribution of valves and their sites in both systems are vastly different. A study of the relationship of the extracellular circulation to that of the lymphatic circulation is clearly required.

Summary

1. The thoracic duct pressure was always higher than the jugular venous and peripheral lymph pressures. Groin lymphatic pressure was higher than at the foot in the resting dog.
2. Skin massage, foot movement, and the calf muscle pump all increased the peripheral lymphatic pressures.
3. Lymph flows by energy from 3 mechanisms:

I. Peripheral Muscular Pump,
II. Abdominal Pump,
III. Thoracic Pump." - in "Lymphatic Pressures and the Flow of Lymph", Brit. Jour. of Plas. Surg., Vol. 23, 1970.

Understanding Lymph Circulation

"The Lymphatic System was for years considered an "accessory" system and was neglected in comparison with the vascular system, which appeared much more crucial.

Researchers have become interested in lymphatic function since many diseases seem to interact with it (cancer, inflammation, infection, auto-immunity).

The circulations of both blood and lymph are involved in cardiovascular function.

Blood circulation is a closed circuit, but many exchanges occur at the venular and capillary levels between blood tissue and perfused organs.

Fluid and proteins can cross from one compartment to another. The lymph circulation returns the lost fluid to the general circulation.

Two etiologies can be distinguished in lymph disease:

1. Excess fluid in the interstitium due to changes in permeability,
2. Impaired draining of fluid by the lymphatics.

Lymph vessels are found in all tissues save those with a low level of exchanges, as bone and cartilage and the particular case of the central nervous system. The lymphatic system plays an important role in lipid absorption as in the intestinal tract where it is particularly developed. It is also involved in immune reactions.

Lymph vessels carry immune factors and cells (lymphocytes) to the tissues and lymph nodes, and act as filters and reservoirs for white blood cells and tumour cells. **Damage to the lymphatic system can cause lymphedema.**

Edema is an excess accumulation in the interstitial space of fluid that has not been reabsorbed by capillaries or taken up by lymphatics.

It can occur because of obstructions, lymphatic insufficiency, increased protein permeability, inflammation, and reduction in plasma proteins." - Olivier Stucker, Catherine Pons-Himbert, Elisabeth Laemmel in "Phlebolymphology", N.58, Vol 15, 2008.

The Emunctory Function of the Lymph

Some Observations Concerning Lymphatic Leukemia

"One recent view concerning chronic lymphatic leukemia is that it is a disease primarily of the lymph glands, which has a characteristic blood picture; the affection of the liver, spleen, and bone marrow is secondary, and produced by metastasis.

Another view is that it is a primary disease of the lymph glands, but produces the characteristic blood picture only when the bone marrow becomes involved in the lymphadenoid change.

A third view is that it is a primary disease of the bone marrow, which consists of a lymphadenoid degeneration; it may remain confined to the bone marrow, or may secondarily through metastases involve the lymph glands, spleen, etc.

The fourth view is that it is a disease of the whole lymphatic tissue, which tissue is preexistent in all organs. M. Rosenfeld reports 3 cases, and discusses them in connection with the theories of the disease.

The 3 cases showed distinct differences in the clinical course, in the condition of the blood, and in their post mortem findings.

In the 1st case there was from the beginning of observation a very marked reduction of the red cells, while this was but slight in the second case.

The number of lymphocytes varied in the 3 cases.

The number of lymphocytes in the peripheral circulation is not indicative of the absolute number produced, but it was striking that in the 3 cases the lymphocyte count was 4 times as great as in the 2nd case, and yet in the 2nd case the sole increase was in the small lymphocytes.

It is an interesting fact that in this case after treatment with arsenic and an evident decrease in the size of the lymph glands, there was a marked increase in the number of circuting lymphocytes. Probably the reduction of the glands was associated with a flooding of the blood with lymphocytes.

One remarkable fact was that in the 1st case an examination of the blood while the glands were enlarged, but before the actual - symptoms of leukemia had come

on, showed no marked blood-changes, and the flooding of the circulation with lymphocytes apparently took place 6 months afterward. This was very probably true, also, in the 3rd case, since the lymph glands had become enlarged 3 or 4 years before the severe general symptoms appeared.

In the 2nd case, in which the increase in cells was, as noted, practically entirely of the small lymphocytes, the postmortem showed enormous involvement of the lymph glands with very marked involvement of the bone-marrow.

In the 1st case no postmortem was obtained. In the 3rd case there was diffuse lymphadenoid degeneration of the bone-marrow. The 3rd case, therefore, stands between those instances in which there is only involvement of the lymph glands, and other cases in which there is only involvement of the bone marrow.

Rosenfeld accepts chronic lymphemia as being one of general lymphosarcomatosis, and thinks that the varying conditions found clinically are due to the varied tissue involvement in the sarcomatous change.

He notes the fact that so far as this condition has been studied, when the lymph-glands are involved to the almost complete exclusion of the bone marrow the increase is chiefly or entirely of the small lymphocytes, while when the bone-marrow was chiefly involved, the large mononuclear lymphocytes were in excess.

It is also notable that in several cases, at any rate, when the bone marrow was uninvolved there was practically no change in the erythrocytes.

His conclusions are that one cannot deny the existence of a primary disease of the lymph glands which may produce either an aleukemic preliminary stage, or which produces chiefly an increase in the small lymphocytes if the disease has become very widespread. If the bone marrow becomes involved sufficiently, the blood picture changes, and the large lymphocytes become increased in number, and in such cases there is likely to be an onset of severe clinical symptoms and a rapidly progressing course.

As to Pappenheim's theory that lymphatic leukemia is primarily myelogenous (produced by the bone marrow) in all cases, Rosenfeld's second and third cases speak strongly against this.

The name, however, given the condition - lymphatic leukemia - should not indicate that the disease is solely one of the lymph glands. It should indicate rather that it is a disease of the lymphatic tissue in general." - in "Philadelphia Medical Journal", 1 February 1901.

Pappenheim's Terminology of Pathological White Cells in the Blood

"Very interesting studies of the pathological forms of white corpuscles met with in the blood in the leukemias have been made by Pappenheim of Berlin." - in Monographic Medicine, 1917.

The Lymphatics

"A student of life must take in each part of the body and study its uses and relations to other parts and systems.

We lay much stress on the uses of blood and the powers of the nerves, but have we any evidence that they are of more vital importance than the lymphatics?

If not, let us halt at this universal system of irrigation, and study its great uses in sustaining animal life.

Where are the lymphatics situated in the body? Where are they not found?

No space is so small that it is out of connection with the lymphatics, with their nerves, secretory and excretory ducts.

The system of lymphatics is complete and universal in the whole body.

After beholding the lymphatics distributed along all the nerves, blood-channels, muscles, glands, and all the organs of the body, from the brain to the soles of the feet, all loaded to fullness with watery liquids.

We certainly can make but one conclusion as to their use, which would be to mingle with and carry out all impurities of the body, by first mixing with the substances and reducing them to that degree of fineness that will allow them to pass through the smallest tubes of the excretory system, and by that method free the body from all deposits of either solids or fluids, and leave nourishment.

Possibly less is known of the lymphatics than any other division of the life-sustaining machinery of man. Ignorance of that division is often equal to a total blank with the operator.

Finer nerves dwell with the lymphatics than even with the eye.

The eye is an organized effect, the lymphatics the cause, and in them the principle of life more abundantly dwells. No atom can leave the lymphatics in an imperfect state and get a union with any part of the body.

There the atom obtains form and knowledge of how and what to do.

The fluids of the brain are of a finer order than any fluids supplying the whole viscera.

By nature, coarser substances are necessary to construct the organs that run the blast and rough-forging divisions.

The lymphatics prepare, furnish, and send the atoms to the builder that he may construct by adjusting all according to Nature's plans and specifications. Nature makes machinery that can produce just what is necessary, and, when united, produces what the wisest minds would exact.The lymphatics are closely and universally connected with the spinal cord and all other nerves, and all drink from the waters of the brain. By the action of the nerves of the lymphatics, a union of qualities necessary to produce gall, sugar, acids, alkalies, bone, muscle, and softer parts, is brought about so that elements can be changed, suspended, collected, and associated and produce any chemical compound necessary to sustain animal life, wash out, salt, sweeten, and preserve the being from decay and death by chemical, electric, atmospheric, or climatic conditions.

By this we are admonished in all our treatment not to wound the lymphatics, as they are undoubtedly the life-giving centers and organs, and it behooves us to handle them with wisdom and tenderness, for by and from them a withered limb, organ, or any division of the body receives what we call a "reconstruction", or is builded anew.

Without this cautious procedure, your patient had better save his life and money by passing you by as a failure, until you are by this knowledge qualified to deal with the lymphatics.

Why not reason on the broad plain of known facts, and give the cause of a person having complete prostration.

When all systems are cut off from a chance to perform and execute such duties as Nature has allotted to them, we have prostration.

Motor nerves must drive all substances to and sensation must judge the supply and demand.

Nutrition must be in action on time, and keep all parts well supplied with power, or a failure is sure to appear. We must ever remember the demands of Nature on the lymphatics, liver, and kidneys.

They must work all the time or a confusion will result, and a deficiency in the performance of their duties will mean a crippling of some function of life over which they preside.

Universally Distributed

Dunglison's definition of the lymphatics is very extensive, comprehensive, and right to the point for our use as doctors of osteopathy.

He describes the lymphatic glands as countless in number, universally distributed all through the human body, containing vitalized water and other fluids necessary to the support of animal life, running parallel with the venous system, and more abundantly there than in other locations of the body, at the same time discharging their contents into the veins while conveying the blood back to the heart from the whole system.

Is it not reasonable to suppose that, besides being nutrient centers, they accumulate and pass water through the whole secretory and excretory systems of the body, in order to reduce nourishment from a thick to a thin constituency, that it may easily pass through the tubes, ducts, and vessels interested in the distribution of materials as nourishment first, and renovation second, through the excretory ducts.

The question arises, Whence cometh this water? This leads us back to the lungs.

With a fountain of life-saving water provided by Nature to wash away impurities as they accumulate in our bodies, would it not be great stupidity in us to see a human being burn to death by the fires of fever, or die from asphyxia by allowing bad or dead lymph, albumen, or any substance to load down the powers of Nature and keep the blood from being washed to normal purity.

If so, let us go deeper into the study of the life-saving powers of the lymphatics.

Do we not find in death that the lymphatics are dark, and in life they are healthy and red?

What we meet with in all diseases is dead blood, stagnant lymph, and albumen in a semi-vital or dead and decomposing condition all through the lymphatics and other parts of the body, brain, lungs, kidneys, liver, and fascia.

The whole system is loaded with a confused mass of blood that is mixed with unhealthy substances that should have been kept washed out by lymph.

Stop and view the frog's superficial lymphatic glands.

You see all parts move just as regularly as the heart does. They are all in motion during life. For what purpose do they move if not to carry the fluids to sustain the building-up processes, while the excretory channels receive and pass out all that is of no farther use to the body? Now we see this great system of lymphatics is the source of construction and purity.

If this be true, we must keep the lymphatics normal all the time or see confused Nature in the form of disease. **We strike at the source of life and death when we go to the lymphatics.**

No part is so small or remote that it is not in direct connection with some part or chain of the lymphatics.

The Doctor of Osteopathy has much to think about when he consults natural remedies, and how they are supplied and administered, and as disease is the effect of tardy deposits in some or all parts of the body, reason would bring us to a search for a solvent of such deposits, which hinder the natural motion of blood and other fluids in functional works, and with that solvent we are to keep the body pure from any substance that would check vital action.

When we have searched and found that the lymphatics are requisite for the body, we then must admit that their use is equal to the abundant and universal supply of all the glands.

If we think and use a homely phrase, and say that disease is only too much dirt in the wheels of life, then we will see that Nature takes this method to wash out the dirt. As an application, pneumonia is too much dirt in the wheels of the lungs. If so, we must wash it out.

Nowhere can we go for a better place for water than to the lymphatics.

Are they not like a fire company with nozzles in all windows ready to flush the burning house?" - Dr Andrew Taylor Still, MD, DO in "The Philosophy and Mechanical Principle of Osteopathy" 1902.

Lymphatic System of the Pancreas

"**A network of lymphatic vessels exists within the pancreas.**

The majority of vessels forming this network lie in the interlobular septa of connective tissue that subdivide the pancreas into lobes and lobules.

Peripheral extensions of these interlobular lymphatics can be found within the lobules, but these intralobular lymphatics are relatively sparse.

In the main, the intimate relationships of these internal pancreatic lymphatics are with the blood vessels and associated connective tissue.

However in random areas, both intra- and interlobular lymphatics come into close

relationship with acinar cells. Rarely are there lymphatics associated with islets of Langerhans, and then only where lymphatic vessels in connective tissue septa pass close to a pancreatic lobule that contains an islet at its periphery.

Intra- and interlobular lymphatics are similar in structure. Both are thin walled having an endothelial lining and a delicate component of connective tissue.

The pattern of interendothelial cell contacts and the sparsity of gaps between adjacent cells suggest that fluid movement through the intracytoplasmic system of vesicles is important in lymph formation in the pancreas.

However intercellular transport is also likely to occur by a dynamic process involving fluid movement through dilatations between cells from interstitium to lymphatic lumen. Both exocrine and endocrine secretions of the pancreas may enter thoracic duct lymph directly in pancreatic lymph, but in normal circumstances this route of entry is not quantitatively important.

The structural relationships between lymphatics and pancreatic parenchymal cells also make clear that lymph is not a significant pathway for their secretory products. Rather, the arrangement of lymphatics in the pancreas supports the view that lymph is primarily the drainage medium for substances that, for whatever reason, enter the interstitium.

In addition, the low flow of lymph compared with that of plasma lends credence to the view that lymph is not a functionally important pathway for endocrine secretions from the pancreas to reach the blood.

Both structural and functional evidence suggests that the proper functioning of the lymphatic system is of critical importance in the homeostasis of the pancreas. The lymphatic system of the pancreas, like that in other organs, is essential in the removal of excess fluid from the interstitium.

In this sense, the lymphatics may be considered to serve as an overflow, protective, or safety system.

When the system is inadequate or its capacity is exceeded, as in inflammation of the pancreas, exocrine secretions entering the interstitium are not cleared and the proteolytic enzymes cause major damage to the tissue.

This, in turn, exacerbates the edema, accentuates the inability of lymphatics to drain the fluid, and results in further damage.

The fibrosis that ensues damages the lymphatics either directly or through stricture of the surrounding connective tissue. In consequence, they become inadequate at an even earlier stage in subsequent attacks of inflammation and thereby predispose to chronic and recurrent pancreatitis.

The larger interlobular lymphatics formed by the junction of their tributaries emerge upon the surface of the pancreas. There they travel primarily with blood vessels and stream toward a ring of lymph nodes that intimately surrounds the pancreas.

A second system of nodes extensively involved in drainage from the pancreas is related to the front and sides of the aorta from the level of the celiac trunk to the origin of the superior mesenteric artery.

This second set of nodes receives lymph either directly from the pancreas or indirectly from the first echelon of nodes that rings the organ." - Dr Charles C.C. O'Morchoe, MD, PhD, Dsc, in "Microscopy Research and Technique", 1997.

The Lymphatics of the Dental Region

"Schweitzer (1907, 1909) deserves the credit of first demonstrating, by injection, the presence of lymphatic vessels in the dental pulp and peridental membrane.

Our work has corroborated his results, and filled out some of the gaps in his findings, especially in showing through its entire extent the drainage from the dental pulp, and the course of the vessels in the infra-orbital and inferior dental canals.

To those who are not familiar with this field of work, it may be well to say a word in regard to the character of the lymphatic system.

All the cells of the body are bathed in fluid with which, through metabolism, they are in vital reaction.

This fluid passes out through the walls of the blood capillaries into intercellular or interfibrous spaces, from which it is collected into minute canals, or spaces, lined by endothelial cells. These are known as the lymph capillaries.

From these the fluid passes into larger channels with delicate endothelial walls, and finally into large lymphatic trunks, some of which have walls similar to the veins.

The fluid is finally returned to the blood circulation through a valve-guarded opening into the subclavian vein.

Along the course of these channels are interposed many lymphatic glands or lymph nodes.

As a general statement, lymphatic vessels are present wherever connective tissue is found.

As long ago as 1891, Foster said:

> *"Of all the varied functions of connective tissue perhaps the most important is this relation to the lymphatic system; in nearly every part of the body connective tissue serves as the bed or origin of lymphatic vessels."*

- Dr Frederick Noyes, DDS, Dr Kaethe Dewey, MD, in "JAMA", 12 October 1918.

Characterization of the Dental Lymphatic System

"The lymphatic vasculature forms a network of vessels in the interstitium and has an important homeostatic role in the body.

This network drains filtered fluid and proteins and returns these elements to the blood through the larger lymphatics. In addition, the lymphatic vasculature serves an important role in the body's immune defense because tissue-resident dendritic cells (DCs) enter the blind-ended lymphatic capillaries and transport captured antigen to lymph nodes where they present the antigen to lymphocytes.

During inflammation, new lymphatic vessels are formed and remove excess interstitial fluid and proteins derived from plasma through the increased vascular permeability.

In addition, **the lymphatic fluid removes foreign invaders, such as bacteria and their by-products, from the peripheral tissue and therefore represents a transport system for infectious agents.**

The dental pulp is a highly vascular tissue that is situated in a low-compliant environment. The low compliance will increase the tissue pressure under situations of increased capillary filtration, and a functional lymphatic system is therefore needed for the transport of fluid as well as of filtered proteins, because the proteins cannot be re-absorbed into blood vessels.

Pulpitis can only be reversed when lymphatics re-establish the normal level of proteins and fluid in the interstitial tissue after control of infection is obtained.

We hypothesized that an extensive lymphatic system exists in dental tissue and that lymphangiogenesis takes place to enhance the transport of fluid, proteins, and foreign invaders during inflammation and also to enhance the transport of antigen-presenting cells to regional lymph nodes." - Ellen Berggreen, et al., in "European Journal of Oral Sciences", 2009.

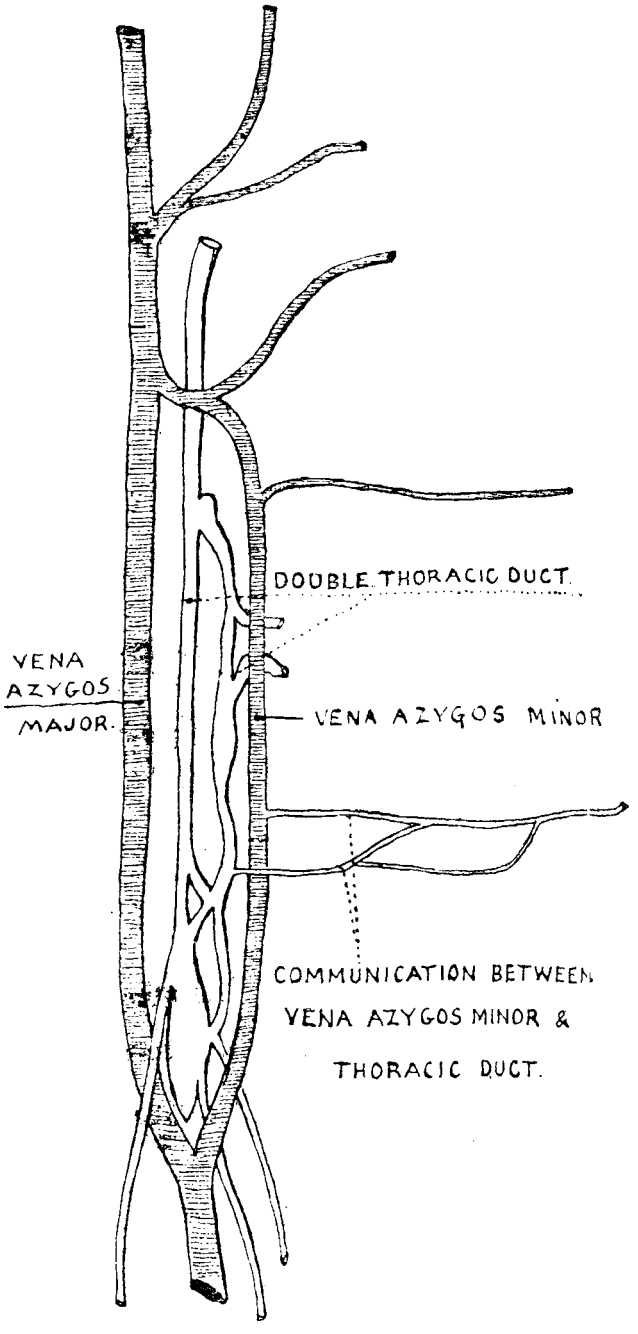
On the Relation of Blood to Lymphatic Vessels

"In The Lancet of 18 June 1898 (p. 1680), in an article entitled "A Method of Injecting the Lymphatic Vessels", I described a communication which I had observed in the inguinal region of the human subject between a lymphatic vessel on the one hand and a vein on the other.

Since that time I have made dissections in the thoracic region in 3 subjects to determine whether this communication was at all constant and in all these instances have I found it to exist.

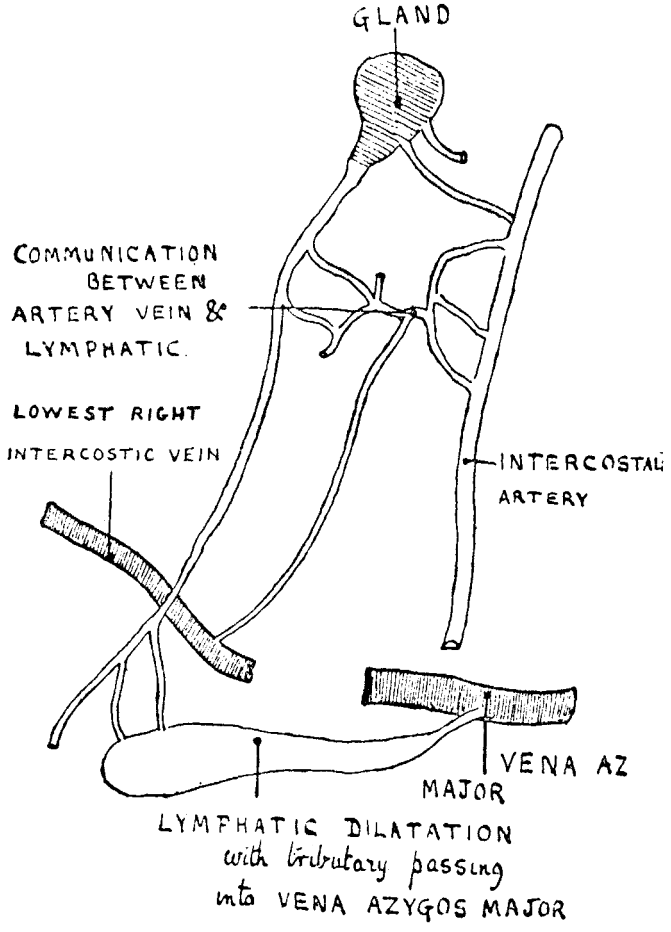
The following illustrations are drawn from dissections made in these subjects which were hardened by formalin.

FIG. 1.



In Fig. 1 the thoracic duct is double. One of the lower left intercostal veins is seen to terminate not only into the vena azygos minor, but to be connected by a small communicating branch with the left half of the double thoracic duct.

FIG. 4.



In Fig. 4 a large lymphatic trunk is found to terminate directly into the vena azygos major and in the same figure an intercostal lymphatic vessel is seen to terminate in the lowest intercostal vein of the right side.

These and other directions show that in the thorax the communication between these 2 sets of vessels is of no uncommon occurrence and I am inclined to regard it as a normal one.

It is frequently found that some of the intercostal lymphatics pour their contents into some of the intercostal veins or into one or both of the azygos veins or that some large lymphatic trunks in the neighbourhood of the receptaculum chyli empty into the vena azygos major.

Lippi of Florence in 1825 was the first to maintain that communications between the lymphatic vessels on the one hand and the portal, internal jugular, renal, inferior cava, and azygos veins on the other hand actually existed.

Recent work would tend, however, to confirm Lippi's contentions.

Thus MacAlister says:

> ***"The chief communications of lymphatics with veins are at the junctions of the jugular and subclavian veins on each side,*** *but a few communications of smaller size occur elsewhere, as into the internal iliac and posterior tibial veins". - in "A Text-book of Human Anatomy", 1889.*

Richard Boddaert (Etude sur une Communication exceptionnelle entre le canal thoracique et la veine azygos chez le lapin, Extrait des Annales de la Societe de Medicine de Gand) experimented on the rabbit, and after ligaturing the thoracic duct and then feeding the animal on a sufficient quantity of fat introduced into the stomach for 4 hours before its death found that in nearly a third of his experiments (5 out of 16) there was a communication between the lymph vessels and the azygos veins.

He found, moreover, that by applying forceps near the junction of the azygos vein and the right vena cava superior, and exercising pressure on the lumbar lymphatic vessels, with each pressure the azygos vein became distended, while its contents owing to the admixture of lymph then became much paler.

Conversely by pressing on the azygos veins the vessels of communication became distended and their contents from being milky became red.

Boddaert has also noticed a large lymphatic trunk pass directly into the external iliac vein. It is always taken for granted that the flow of lymph is from the lymphatic vessel into the vein, and in the great majority of cases, of course, this is the case, but whether it is invariably so along some of these communicating vessels I think there is good reason to doubt.

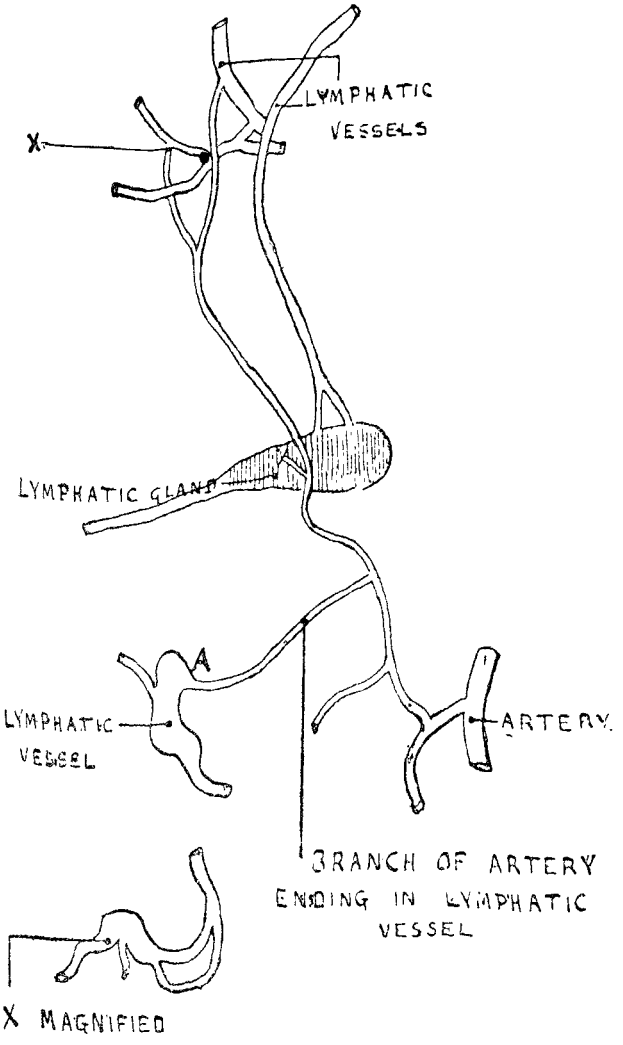
In Fig. 1, for instance, the blood is obviously passing from the intercostal vein into the vena azygos minor, and from the direction of the communicating vessel probably through this into the left half of the thoracic duct, or, in other words, it would seem, judging by the direction and relative sizes of the vessels, as though the thoracic duct was here receiving a small venous tributary.

In the superior mediastinum I have seen small veins coming from the thyroid gland empty themselves directly into the large lymphatic trunks in this region.

By some of the smaller veins emptying themselves into the larger lymphatic trunks it would seem that the somewhat sluggish movements of the lymph current would be thereby quickened.

Not only are the veins but also small arteries in the thorax brought more immediately into relation with lymphatic vessels than hitherto supposed.

FIG. 3.



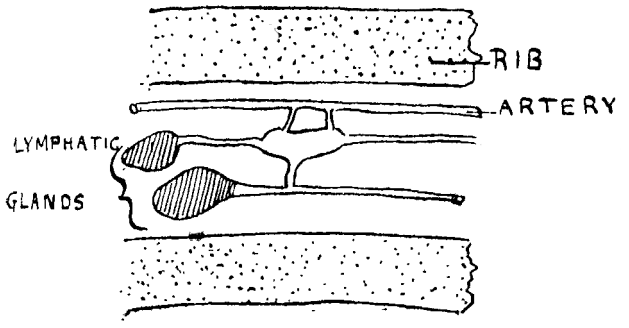
In the specimen from which Fig. 3 was drawn the lymphatic vessels were well marked and at one point, X, I traced from one of them a vessel which at first I took to be a vein.

On tracing it further, however, it was proved to be a branch of an intercostal artery.

As far as could be seen with the aid of a strong magnifying glass this vessel passed directly at the point X into the lymphatic vessel.

In the diagram the other terminal branch of the same artery also appeared to end in a lymphatic, but though represented as doing so in the diagram I could not be absolutely certain on the point; however, another branch of the same artery could be easily seen with a magnifying lens to end in a vessel which from the translucency and beaded appearance was obviously lymphatic.

FIG. 2.



Again, in Fig. 2 an intercostal artery is seen to give off 2 small parallel branches which end in a dilatation into which a lymphatic vessel passes in at one extremity and emerges at the other; from this dilatation a short branch passes to another lymphatic vessel.

In Fig. 4, again, one of the lower intercostal arteries on the right side is seen to give off 3 branches which unite together and form a loop from the convexity of which a branch passes off which communicates directly with a lymphatic vessel; from this branch, again, another vessel passes off which terminates in the lowest right intercostal vein; in this case there is a direct communication between an artery and a lymphatic vessel and an indirect one with the lowest right intercostal vein.

It has been known for some time that the lymph often assumes a pink or reddish hue, and the colour has been shown (Cyclopaedia of Anatomy and Physiology: Lymphatic System by S. Lane, Vol. III, p. 230., 1847) to be due to the presence of red blood corpuscles.

How do the corpuscles pass into the lymphatic vessels?

If the fact already mentioned is admitted - viz., that a certain number of small arteries pour their contents directly into lymphatic vessels-the presence of these corpuscles is readily explained, and another factor is present which would materially quicken the movements of the lymph; however, it is only right to add that the arteries apparently do not communicate directly with the lymphatics nearly so frequently as do the veins.

If the communications between the veins and lymphatics can be shown beyond a doubt to take place all over the body-and already they have been observed to exist to a very considerable extent-it follows that we ought to regard the venous system as a part, and that no inconsiderable part, of the absorbent system.

We shall then have a ready explanation of certain facts usually regarded as peculiarities in connexion with dissemination of the sarcomata and the carcinomata.

It is known that the former usually spread by the veins but sometimes involve the lymphatic glands.

The latter invade the lymphatic glands and where secondary deposits are found in the liver, for instance, after carcinoma of the rectum the veins and not the lymphatics are probably the channels through which the cells have passed to reach the liver.

It is a fact also that some of the carcinomata, though affecting the lymphatic glands to a slight extent only, yet disseminate rapidly; in such cases it seems hard to believe that the cells have had to traverse innumerable chains of lymphatic glands which, as all admit, act as most efficient barriers before they could pass into the general circulation.

A more ready explanation, I would suggest, and one in accord with the facts, would be that the cells had taken, as it were, a short cut into the circulation either by passing along these communicating vessels into the veins or else had passed into the veins by means of the direct continuity which Frohmann pointed out exists between them and the lymphatic vessels in the substance of the lymphatic gland itself." - Dr Cecil H. Leaf, MA, MB, FRCS, Assistant Surgeon to the Gordon and Cancer Hospitals, late Assistant Demonstrator of Anatomy at the London Hospital, in "The Lancet", 3 March 1900.

"After reviewing the literature, Dr Cecil H. Leaf, MA, MB, FRCS, reports observations made by him upon dissected human subjects.

His conclusions are as follows:

1. The azygos veins normally receive a great many lymphatic vessels.

2. Some of the smaller arteries in the thoracic region open directly into the thoracic vessels; some of the smaller veins open directly into the large lymphatic trunks; and these two factors help to quicken the movement of the lymph.

3. Direct communications are found to exist between the arteries, lymphatic vessels, and veins.

4. The communications between the veins, and lymphatic vessels have been observed to take place in a great many regions in the body.

5. Owing to the presence of these communications the cells of a malignant growth can pass either from the lymphatics into the veins or vice versa, and hence not only in the sarcomata, but also in the carcinomata, the veins, as well as **the lymphatics, should always be regarded as channels along which the cells may at any moment be conveyed to distant parts of the body."** - in "New York Journal of Medicine", 17 March 1900.

Intestinal and Hepatic Lymphatic Systems

"The role of the intestinal and hepatic lymphatic systems in the pathogenesis of several old and new diseases has become more clearly defined in the past several years. ***The importance of hepatic lymph in ascites (abnormal buildup of fluid in the abdomen) and the crucial role of lymph in immunological competence have been recognized, in which the intestinal and hepatic lymphatics play a major role."*** *- Dr Frank BW, MD, Dr Kern F Jr., MD in "Intestinal and Liver Lymph and Lymphatics", Gastroenterology, Sep. 1968.*

Lymph System Facts

"Lymph is a clear and colorless fluid; the word "lymph" comes from the Latin word lympha, which means "connected to water".

One reason for the presence of waste in the interstitial fluid and the lymph system is the death of millions of cells daily.

These have to be broken down and eliminated from the body.

Every cell in the body is bathed in a semi transparent fluid called interstitial fluid.

This fluid is similar in mineral composition to sea water.

The interstitial fluid delivers oxygen and nutrients to the cells and transports out of the cells carbon dioxide and waste products.

The interstitial fluid is derived from the blood but contains no red blood corpuscles.

The waste products from the cells must be eliminated to maintain life and health.

The bulk of the waste is passed via the interstitial fluid into the blood via osmosis and returned into the circulation by the veins, these are eventually eliminated from the body after processing by the Liver, immune system bowel and kidneys, and to some extent sweat. Also carbon dioxide is eliminated via the lungs.

About 10 to 20% of the debris is too large in size, such as discarded proteins, to pass back into the venous capillaries and has to exit via the lymphatic circulation, the body's main waste disposal system.

The Lymph System is a network of fluid, organs, nodes and nodules, ducts, glands and vessels that continuously and aggressively cleanse the system of waste matter.

Millions upon millions of nodes, some tiny, some large, guard the passages into the body against the intrusion of destructive substances. Placed end to end in a straight line, all the lymph vessels in one body would cover a distance in excess of 100,000 miles (more than four times around the earth). **There is 3 times as much lymph fluid in your body as there is blood.**

The lymph system is involved in the production of white blood cells (lymphocytes) that seek out, capture and destroy foreign substances such as bacteria and other "invaders", and remove them from the body."

The Lymphatic System is Cooperative

- The lymphatic system aids the immune system in removing and destroying waste, debris, dead blood cells, pathogens, toxins, and cancer cells.
- The lymphatic system absorbs fats and fat-soluble vitamins from the digestive system and delivers these nutrients to the cells of the body where they are used by the cells.
- The lymphatic system also removes excess fluid, and waste products from the interstitial spaces between the cells.

The Transformation

Arterial blood carries oxygen, nutrients, and hormones for the cells.
To reach these cells it leaves the small arteries and flows into the tissues.
This fluid is now known as interstitial fluid and it delivers its nourishing products to the cells.
Then it leaves the cell and removes waste products.
After this task is complete, 90% of this fluid returns to the circulatory system as venous blood.

What is Lymph?

The remaining 10% of the fluid that stays behind in the tissues as a clear to yellowish fluid known as lymph.

- Unlike blood, which flows throughout the body in a continue loop, lymph flows in only one direction within its own system. This flow is only upward toward the neck. Here, it flows into the venous blood stream through the subclavien veins which are located on either sides of the neck near the collarbones.
- After plasma has delivered its nutrients and removed debris, it leaves the cells. 90% of this fluid returns to the venous circulation through the venules and continues as venous blood.
- The remaining 10% of this fluid becomes lymph which is a watery fluid that contains waste products. This waste is protein-rich due to the undigested proteins that were removed from the cells.

Lymphatic Circulation

The lymph is moved through the body in its own vessels making a one-way journey from the interstitial spaces to the subclavian veins at the base of the neck.

- Since the lymphatic system does not have a heart to pump it, its upward movement depends on the motions of the muscle and joint pumps.
- As it moves upward toward the neck the lymph passes through lymph nodes which filter it to remove debris and pathogens.
- The cleansed lymph continues to travel in only one direction, which is upward toward the neck.
- At the base of the neck, the cleansed lymph flows into the subclavian veins on either side of the neck.

The Origin of Lymph

Lymph originates as plasma (the fluid portion of blood). The arterial blood, which flows out of the heart, slows as it moves through a capillary bed. This slowing allows some plasma to leave the arterioles (small arteries) and flow into the tissues where it becomes tissue fluid.

- Also known as extracellular fluid, this is fluid that flows between the cells but is not into the cells. This fluid delivers nutrients, oxygen, and hormones to the cells.
- As this fluid leaves the cells, it takes with it cellular waste products and protein cells.
- Approximately 90% of this tissue fluid flows into the small veins. Here it enters the venous circulation as plasma and continues in the circulatory system.
- The remaining 10% of the fluid that is left behind is known as lymph.

Lymphatic Capillaries

In order to leave the tissues, the lymph must enter the lymphatic system through specialized lymphatic capillaries. Approximately 70% of these are superficial capillaries located near, or just under, the skin. The remaining 30%, which are known as deep lymphatic capillaries, surround most of the body's organs.

Lymphatic capillaries begin as blind-ended tubes that are only a single cell in thickness. These cells are arranged in a slightly overlapping pattern, much like the shingles on a roof. Each of these individual cells is fastened to nearby tissues by an anchoring filament.

Lymphatic Vessels

The lymphatic capillaries gradually join together to form a mesh-like network of tubes that are located deeper in the body.

- As they become larger, and deeper, these structures become lymphatic vessels.
- Deeper within the body the lymphatic vessels become progressively larger and are located near major blood veins.
- Like veins, the lymphatic vessels, which are known as lymphangions, have one-way valves to prevent any backward flow.
- Smooth muscles in the walls of the lymphatic vessels cause the angions to contract sequentially to aid the flow of lymph upward toward the thoracic region. Because of their shape, these vessels are previously referred to as a string of pearls.

Lymph Nodes

There are between 600-700 lymph nodes present in the average human body. It is the role of these nodes to filter the lymph before it can be returned to the circulatory system. Although these nodes can increase or decrease in size throughout life, any nodes that has been damaged or destroyed, does not regenerate.

- Afferent lymphatic vessels carry unfiltered lymph into the node. Here waste products, and some of the fluid, are filtered out.
- In another section of the node, lymphocytes, which are specialized white blood cells, kill any pathogens that may be present. This causes the swelling commonly known as swollen glands.
- Lymph nodes also trap and destroy cancer cells to slow the spread of the cancer until they are overwhelmed by it.
- Efferent lymphatic vessels carry the filtered lymph out of the node so that it can continue its return to the circulatory system." - Lymph Notes, 2012.

The Concept of Drainage

David McMillin, MA in "Principles Principles & Techniques of Nerve Regeneration: Alzheimer's Disease & the Dementias", 1997.

"Along with Neuropathic Coordination, Drainage is an essential component in the Regenerative Regimen for Rebuilding the Brain.

The emphasis on drainages is based on 2 important ideas:

1. In cases of progressive nerve deterioration the body is likely to be toxic;
2. Presumably, regenerative modalities will put the body into a reconstruction mode which is likely to increase the toxicity of the body.

The body has natural systems of elimination for cleansing itself. Regulation of these systems can assist the body in the cleansing process. This assistance may be needed because the pathological condition of the primary regulatory system of the body (the central nervous system) may be compromised due to the illness. Furthermore, providing support to the body's innate healing processes is fundamental to Osteopathic and Neuropathic philosophy. To understand the natural process of drainages, it is helpful to review the physiology of this aspect of elimination as presented in the osteopathic literature:

"The artery carries nutritional substances and oxygen to the tissues. Its functional impairment results in deficient oxidation. Contrariwise, any circulatory perversion affects the respiratory function. Upon the lymphatic circulation falls the duty of direct cell-feeding and drainage. Veins are charged with general drainage. They are more easily compressible than arteries on account of their thinner and more flaccid walls. Interference with their physiological activities results in passive hyperemia and a storing up in the tissues of catabolic products." - Downing, in "Principles and Practice of Osteopathy", 1923.

Thus, venous and lymph circulation are the primary pathways of waste removal and tissue cleansing in the body.

Setting up Drainages

The osteopathic literature contains also abundant suggestions for setting up drainages.

Here are some principles:

"Venous circulation is encouraged by muscular contraction. Thus congestion in a certain area may be relieved by passive movements of the muscles and by deep massage. The beneficial influence exerted on conditions about the head by thorough relaxation of the musculature about the neck in osteopathic practice, may be explained in part by its effect upon venous drainage of the head." - in "Osteopathic Fundamentals", 1927.

"The lymph stream must always be drained first through the terminal areas. Attempts to clear the lymph stream before clearing the edema in the clavicular regions is to over-tax the general lymph stream and cause profound reactions. Any permanent results in

treating the lymphatics must be accomplished through the nerve centers that control the vasomotor nerves of the blood vessels in the same region as the lymph blockage. Never work over an enlarged or indurated lymph node - free the efferents and the lymph will drain. General exercises will stimulate lymph flow, but if there is marked lymph blockage it is better to relieve the lymph tension before exercises are given. This will save marked reactions." - Millard, "Applied Anatomy of the Lymphatics", 1922.

Manual Therapy Techniques to Improve Drainages

The following description of osteopathic drainage is particularly relevant because it focuses on the issues of drainage in cases brain degeneration.

It is entitled, "Brain Troubles".

"The Osteopath's work is directed toward 2 primary objects:
1st. The equalizing of the general circulation of the blood.
2nd. The continued control of the blood supply to the brain and the correlative drainage.
To accomplish these ends the circulatory centers are first thoroughly treated; the muscles, ligaments and tissues which surround them are relaxed by pressure and by movements which will stretch the tissues. The next treatment is a stimulation put upon the deeper structures so as to secure the action of the heart and arteries. The 3rd to 5th dorsal is the region for this work. Next, raise the clavicles; notice carefully the 1st rib and put steady pressure on the inferior cervical ganglion. The solar plexus, controlling the lumen of the mesenteric vessels, aid in controlling blood pressure. The hand laid firmly over the solar plexus will reduce general arterial pressure and by equalizing the flow will relieve congestion in any part of the body. The tissues of the neck demand a complete relaxation. This is for drainage. Then by holding the vertebral arteries for 3 to 5 minutes, the head thrown backward, the cerebral congestion is overcome. In cases of cerebral congestion the feet should be placed in warm water and ice bags applied at basis crani." - Riggs, in "A Manual of Osteopathic Manipulations and Treatment", 1901.

Drainage of the Head and Neck

"Deep drainage treatment may be done by direct relaxation behind and under the angles of the jaws with the head well extended. By forcing the head and jaw backward thus compressing these glands and again extending the repeating the direct deep drainage treatment, the glands and vessels may be "pumped" and made to increase their function of drainage. Except in acute inflammatory conditions, direct stretching of the soft palate and dilatation of the posterior nares by means of the fingers are effective; also exercises for draining the cervical lymph glands and exercising the muscles of the neck are effective....

According to Treves, "Accessory glands, belonging to the thyroid body, are frequently found in the vicinity of the hyoid bone. They are also found in the basal part of the tongue, near the foramen caecum. In many cases of acute disease the swelling of these glands like the postpharyngeal glands cause much soreness and discomfort. In tonsillitis, pharyngitis, etc., there is usually some affection of these glands, but, as stated above direct treatment is not indicated during the acute state. Deep relaxation under the angles of the jaws externally will facilitate drainage.

After the acute stage has passed, direct treatment may be done as follows:

The 2 cornui of the hyoid are grasped between the thumb and second fingers of the left hand, palm upward, while the 1st and 2nd fingers of the right hand are passed, palm downward, over the base of the tongue thus holding the hyoid firmly between these 4 fingers.

The hyoid may now be lifted upward and thus by virtue of its attachment to the thyroid cartilage, the entire larynx may be lifted. The hyoid is held in this position for a few seconds, then pulled firmly forward and then downward and by these movements they pharyngeal constrictors may be relaxed and lymphatic and venous drainage accomplished." - Deason, in "Millard", 1922.

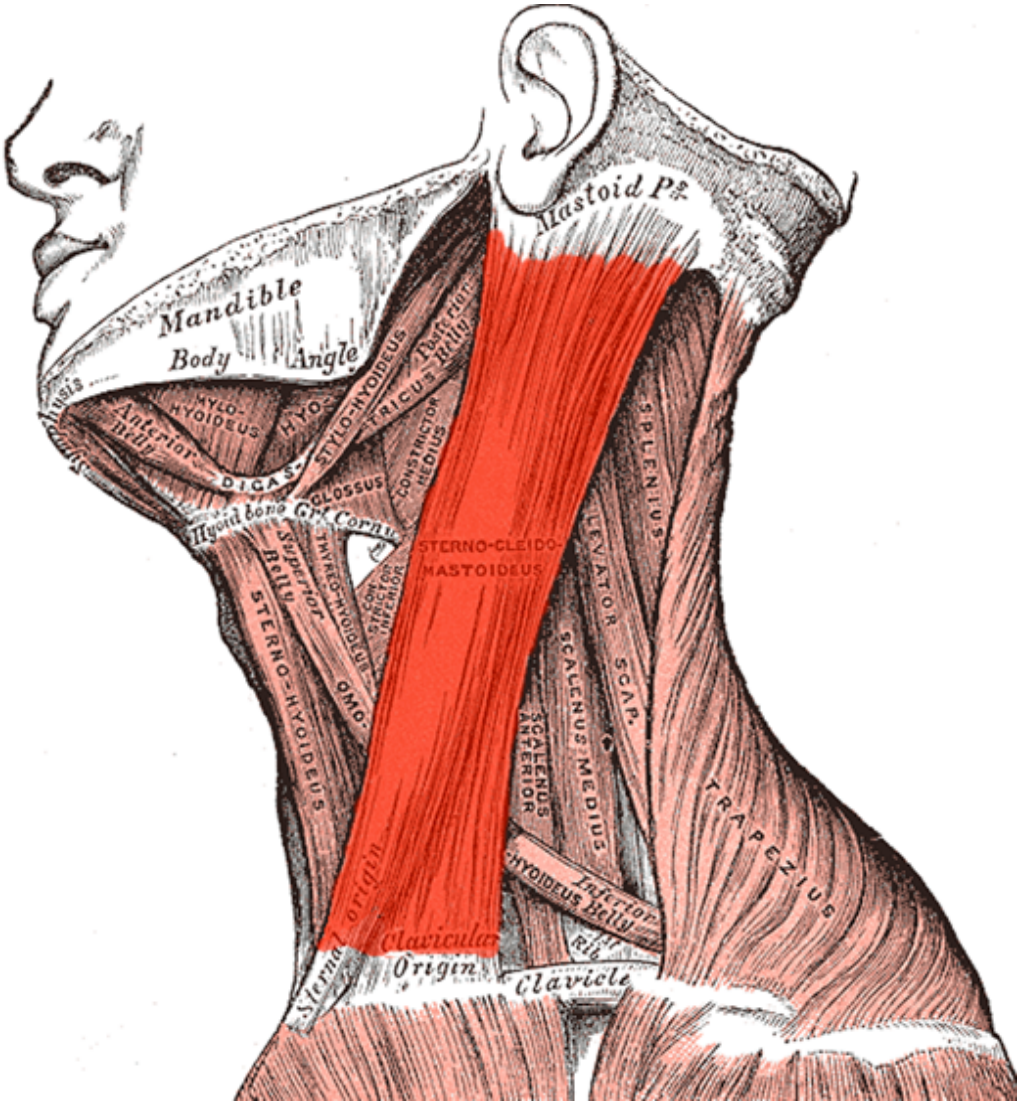
Draining Cervical Lymphatics

"To drain the cervical lymphatics stand on the right side of the patient, in dorsal position, place the left hand on the forehead, and with the right hand reach over the sterne cleide mastoid muscle, draw the muscles up closely around the chin, with pressure on parotid and sub-mental gland, turn the head away gently with the left hand and continue this movement downward, one vertebrae at a time, to the 7th cervical. Gently inhibit with right index and middle finger the 1st and 2nd dorsal vertebra together, drawing muscles away from spine, turn head away from operator and upward.

Place the hand down over the scapula, draw the muscle up and place fingers against the superior border, laying the right arm against the chest of the patient and turn the head slowly and gently in the opposite direction from the operator. Stand at head and cross the hands under the patient's head.

Flex the head toward the chest, let down slowly, have the patient turn head to right and flex forward towards the patient's right elbow. Let the head slowly backward and turn to the left and flex toward the left.

This movement stretches all the posterior neck muscles, ligamentum nuchae, trapezius muscle, flexes all anterior muscles and completes drainage of cervical lymphatics." - Haverin in "Original Osteopathic Moves Taught by Doctor Andrew Taylor Still to Doctor".



"Sternocleidomastoid muscle" - in "Gray's Anatomy", 1918.

Lymphatic and Venous Drainage

A) Active: Patient lies supine on table.

He exhales completely, closes his mouth and grasps and compresses his nose with his fingers.

The doctor then asks him to contract his diaphragm and pull his abdomen inward as in attempting forced inspiration. This is repeated 5 or 6 times.

With shoes removed and lower extremities at right angles to trunk, the patient is asked to flex toes, circumduct ankles, and repeat the forgoing diaphragmatic exercise to reduce edema of ankles.

B) Passive: (Lymphatic or Thoracic Pump).

Patient lies supine.

Doctor stands at head of table and places both hands flat on patient's chest with thenar eminence of each hand just inferior to the medial end of the clavicle and over the anterior end of the first rib.

Doctor stands with upper and lower extremities rigid and trunk inclined forward at an angle of about 60 - 70 degrees with the floor.

He springs slightly up and down on toes, exerting quick, short thrusts on patient's chest at a rate of 20 - 60 a minute.

Cautions

A. This treatment should not be continued for more than 3 to 5 minutes.

B. It should be used guardedly in patients past 55 years of age on account of danger of separation or fracture of costochondral articulations.

C. It should not be used on patients with emphysema.

D. It should be used with great caution on cardiac patients with inadequate compensation." - College of Osteopathic Physicians and Surgeons, 1941.

Thoracic Lymph Drainage

"Going back to the lymph drainage of the lymph drainage of the muscles (of the thorax) we may reach and influence the flow of lymph through a better vasomotor control of the blood vessels that supply the tissues and nodes. We may also reach the lymph drainage through correction of lesions that remove muscle tension over and around the lymph vessels and nodes.

This will call for adjustment of the cervical region to insure normal tone in the brachial plexus.

Correction of upper thoracic and rib lesions will stimulate vasomotor and trophic centres. Costal correction will regulate the upper thorax so that the lymph drainage into the subclavian veins will not be checked.

The scaleni may be overtensed through cervical lesions." - in "Millard", 1922.

To Stimulate Lymph Flow

"Among the noteworthy methods are:

1. Deep Breathing. With each inspiration the flow of blood through the innominate veins causes a suction at the openings of the thoracic and right lymphatic ducts. This may be augmented by intra-abdominal pressure if the abdomen be forcibly drawn in.

2. Manipulation of the extremities by flexion of the joints and compression of muscles. This may be either active or passive.

3. Raising intra-abdominal blood-pressure by direct work over the abdomen and by compressing the ribs.

4. Restoring normal tone to the diaphragm if it is prolapsed or relaxed.

Dr. Still suggests that such prolapse may cause embarrassment to the thoracic duct. Hazzard elaborates this suggestion in "An Osteopathic Study of the Diaphragm", which is well worth pondering.

5. Drinking hot water, or preferably hot salt solution, or injecting the same per rectum and retaining it." - Downing, in "Millard", 1922.

To Increase the Volume of Lymph

"The volume of lymph may be increased in various ways, among which may be mentioned:

1. Active and passive muscular movements. Landois says: "Muscular activity causes increased lymph production, as well as more rapid escape of the lymph. The tendons and fasciae of the skeletal muscles, which possess numerous small stomata, absorb lymph from the muscular tissue".

2. Increase of blood-pressure by any of the manipulative means noted above. In this connection readers are commended to carefully study an address given by Dr. Hazzard at St. Louis in 1904, on "Osteopathic Manipulation of the Blood-Mass."

3. Quantities of hot water or salt solution per os or per rectum. The reason for advising the use of hot water rather than cold lies in the fact that heat dilates the blood vessels, and absorption takes place more rapidly, while cold water causes contraction of the vessels." - Downing, in Millard, 1922.

Treatment for Drainage and Circulation of the Thorax

"In cases of pneumonia and allied conditions, there is one master treatment which accomplishes amazing results. This, I term the "make and break" movement. With one hand one the heads of the ribs posteriorly and the other on the ribs anteriorly, spring the ribs rhythmically in a line with their angle, alternating the pressure from hand to hand. To promote vaso-dilatation, sit down beside the patient with the hands at the 2nd and 3rd dorsal vertebrae. Exert pressure enough to relax and inhibit for 10 to 15 minutes, repeating as the case necessitates. Then, standing at the head of the bed, grasp the neck as low down as possible so as to get straight traction on the 2nd dorsal. Make and break for dilatation of the lung arterioles. Direct pressure movements downward and backward over the sternum and upper seven ribs on each side, the patient lying on his back, are very efficacious in stimulating the lymphatics." - Snyder, in Millard, 1922.

List of Toxins and Waste Products Lymph Drained by the Lymph

The circulation of lymph provides ample opportunity for toxins to come in contact with the surfaces of the body's powerful cleansing cells (such as macrophages and lymphocytes).

The lymph contains waste products for example metabolic breakdown products, inflammatory products or fat from the abdominal cavity and cellular debris together with bacteria and proteins, this waste is protein-rich due to the undigested proteins that were removed from the cells.

More than 99% of soluble toxins (called antigens) can be trapped by the body's lymph nodes.

Lymph-Stasis Arising as a Primary Condition in Various Organs, or Partly So

"But besides some inherent defect on the part of the lymph-glandular system lymph-stasis would appear to rise primarily in some cases from such conditions as to tend to flood its channels.

These conditions are:

1. Deficient blood circulation from some cause, as in great prostration during the last days of an illness
2. Increased physiological action in an organ;
3. Acute inflammation from any cause.

In all three there is a tendency to overload the lymphatics and to disturb the adjustment either temporarily or permanently.

Reasoning on this basis one is not surprised to find strumous disease of the bones in growing children, in which case many factors may combine to bring about lymph-stasis, In nearly every case of strumous bone or joint disease one gets some history of injury which may be viewed as the immediate exciting cause.

One word with regard to inflammation, Its clinical features will depend upon the specific cause in each case, as well as the constitution or state of health of the individual at the time of its onset.

Simple traumatism may lead to increased physiological action in the part, but extensive inflammatory changes are usually attributable to the introduction of some form of microbe, Waste products, unless speedily carried away by the blood-vessels and lymphatics, will cause a "choking" of the lymph-glandular system related to the inflamed area.

If the lymphatics be functionally adequate little harm will probably arise as the result of the inoculation, but when the reverse obtains many specific organisms

will find a congenial soil for their growth. Everyone must be acquainted with the difference presented by the cicatrix which forms after a superficial inflammation in a strumous and in a non-strumous subject.

The hypertrophic aspect in the former may be due to defective absorption by the lymphatics." - Dr Wayland C. Chaffey, MD in "Lymph-Stasis, or, Retardation of Lymph as an Element in the Causation of Disease", 1889.

"We strike at the source of life and death when we go into the lymphatics." - Dr A. T. Still, MD, DO in "Philosophy of Osteopathy", 1899.

Development of Tumours

I. - Local and **Lymph Node** Spread: is **Lymph-borne**
II. - Remote and **Visceral** Spread: is **Blood-borne**

"Put differently, the old authorities were most impressed by the following sequence in the Spread of Carcinoma:

1st - Lymphogenous conveyance to the Lymph Nodes
2nd - Thereafter, Haematogenous carriage to the Organs

"It was generally admitted that secondary development of tumours in distant organs is essentially due to embolism, particles being carried by the lymphatic or blood vessels respectively, and lodged in the lymphatic glands, or internal organs". - Cameron, 1879.

"According to the channel of transport, we find metastatic affections in the lymphatic vessels and glands which receive the infected lymph; or in remote organs irrigated by the infected blood". - Ziegler, 1883.

This dichotomous concept of metastasis had been handed down for generations. The accepted link between the 2 metastatic mechanisms was the collecting trunks of the lymphatics, especially the thoracic duct.

For example, these lymphatic trunks, in the opinion of Hutchinson (1881), should be regarded as the drain-pipes through which the cancerous cesspool communicates with the stream of blood. The progress downstream was depicted by Lizars (1838) as starting in the lymph nodes in the vicinity, then radiating to those more distant, and finally affecting whole chains in the system.

Hence, as Cohnheim (1889) commented, the affection of the nodes generally precedes the formation of the visceral deposits by a longer or shorter interval." - Dr Wilson Onuigbo, MD in Scottish Medical Journal", 1 August 1970.

The Emunctory Flow

The body most be working always in a balanced manner. If the Emunctory System is faulty in its working, then this will cause first discomfort then disease to follow.

So it is importance that there is no hindrances placed upon the Emunctory functions, each individual must take awareness and responsibility to allow all the organs of the Emunctory system to work properly without being overtaxed with improper foods, either has in detrimental combinations, or in excessive amounts, or foods that are highly detrimental to the body and bring no significant or proper food value to the digestive system thus becoming and hindrance to same.

If the Emunctory flow is not kept normal in its workings, and in their action with all others organs, and if they don't expel off from the body as they should, then the body will be affected by conditions that will (as a cause), arise in consequence of its lack of proper working.

This if left in the body system will inevitably have a detrimental effect by the force flow, into and throughout the blood supply, this causes inefficiency of the elements to carry out their normal function.

Thus producing overtaxation to the organs involved in the Emunctory process.

When discomfort or disease encroaches and settles in the body, and the emunctory organs are overwhelmed, then there arises the need for the application of external therapeutic methods: either by the usage of High Value Medicinal Plants (with their effects upon each organ of the body in aiding the circulation of the force in the Emunctory flow), or by the usage of Hydropathy, Osteopathic Manipulation and Chiropractic Adjustments applied to any anatomical part of the body requiring correction, thus aiding the natural flow force to all organs directly or indirectly associated with the Emunctories.

When the body starts to malfunction the therapeutic agents by High Value Medicinal Plants, Hydropathy, Osteopathy and Chiropractic treatments will aid the body to bring to the body from without this corrective measures to same, when the body organs are too weak to regenerate themself.

Mental Attitude

The body has forces within its system, as to renew that within the body, if we don't bring, or put hindrances upon the body by improper nutrition, mental attitudes or detrimental emotions.

The correct mental attitude positive thinking, always helpful and grateful and emotions which are constructive in nature, then these through the nervous system will have an influence upon the working of the internal organs, which has a consequence will cause discomfort and distortion on the skeleton muscle system of the body, and conditions which did not exist prior will arise in consequence of same. When ever we have a so-called disease or discomfort it means that we have an improper balance within the system.

The Renew and Regenerative Power of the Body at the Cellular Level

Autophagy, its role in the Maintenance, Rejuvenation & Repair Mechanism of the Body. In 2016 the Nobel Prize in Physiology or Medicine was awarded to Yoshinori Ohsumi, "for his discoveries of mechanisms for autophagy".

Autophagy is the way cells break down non-functional organelles and proteins in the cell. It protects cells against damage and death to promote longevity.

Autophagy also facilitates the destruction of intracellular infectious pathogens.

Autophagy: A dynamic Cellular Recycling Process

Autophagy plays an important role in the maintenance of energy homeostasis, both at the cellular level and within the organism as a whole. Thus a key player in Cellular and Body Metabolism.

1. Degenerates the waste generated by the Body Autophagy and apoptosis control the turnover of organelles and proteins within cells, and of cells within organisms, respectively. Autophagy may be regarded as a mechanism of cellular cleansing.
2. Makes fuel for their renewal Maintenance of energy homeostasis, both at the cellular level and within the organism as a whole.
3. Fight off infections from germs.

Autophagy not only degrades components of host cells but can also target intracellular bacteria and thus contribute to host defences.

This shows that the body is equipped with mechanism of maintenance which allow it to self repair and rejuvenate. As long the individual does not hinder the process by liberal consumption of food stuffs detrimental to both digestion and to the body.

The Importance of Cellular Vitality

"Recognizing the importance of Cellular Vitality, the trend of modem research along preventive lines is directed not only against the causative germ, when one is known or suspected, **but against the products of such organisms, the toxins or poisons which are liberated in the tissues as a result of the activity of these.**

Prevention by elimination is directed not only against the bacterial toxins, but against the tissue toxins as well.

The work of Carrel, of the Rockefeller Institute, **has shown that tissues may continue to live almost indefinitely, provided the toxins of the tissues themselves, the products of the activity of the individual cells, be removed.**

It would seem, therefore, that if a spring of eternal youth or a fountain of everlasting physical life, is even in a measure to be discovered, it must provide for the purification of the individual cells, and thus of the body as a whole. For it is essential to health, and even to life, that we get rid not only of the poisons

which may be absorbed from without, but the poisons produced in the very living and being of the cells which constitute our bodies. In other words, we must help nature, wherever she needs help, in the elimination of the products of metabolic activity. There is, as I have suggested, abundant evidence to prove that **faulty elimination of the products of physiological activity is a fundamental factor in the production of such states of being as facilitate the taking on of disease, if, indeed, it is not itself the essential cause of certain diseases."** - Dr William Seaman Bainbridge, AM, ScD, MD, CM, New York City, in "Some Fundamental Causes of Disease", Texas State Journal of Medicine, April 1927.

The Nerves of the Capillaries, with Remarks on Nerve Endings

"Theory of Lymph-Formation and of Glandular Secretion.

After tracing the fibers of the chorda tympani nerve in the submaxillary gland, Chr. Sihler came to the conclusion that the gland cells themselves are not supplied with nerve fibets, but that the terminal fibers are found on the capillary vessels just as in the case of the capillaries of muscular tissues, and that, therefore, those nerves of muscle that are analogous to the glandular nerves are not the motor nerves, proper, but are those going to the capillaries.

The author histologic studies led him to the conclusion that **there is a vast peripheral network of fine nerves, co-extensive with the capillaries of the muscles and glands, which has connections with sensory nerves and into which motor nerve trunks also enter, and which he therefore looks upon as being both sensory and motor. These nerves, so intimately connected with the capillaries, influence the protoplasm of their walls is such a way, that, according to the activity of the nerves, the transudation of lymph is increased or diminished.**

Further, they take cognizance of disturbances of a local or mechanical nature, and, in response to local causes of irritation, influence the capillaries of a part to pour out more fluid and act in the interest of the organ in question.

As increase of lymph formation and vasodilation must, in the long run, go hand in hand, it would seem reasonable to suppose that the nerve fibers going from the capillaries to the arteries and veins may exert an inhibitory influence on the vaso-constrictors, or a stimulating one on the vasodilators, thereby a larger supply of food is furnished to the irritated part. The investigations have led to conclude that the motor nerve-endings of the muscles remained on the outside of the sarcolemma, and except that the surfaces where muscle and nerve come into contact are covered with a strong sheath of Schwann which has its own nuclei.

What may be the exact condition of things at the points where muscle and nerve fibers are in actual contact, whether the sarcolemma and neurolemma are wanting there, perforations exist, or whether **electrical phenomena observed in nervous activity can be used to explain the processes going on in the relation of muscle to nerve."** - in "The Alienist and Neurologist", 1901.

The Vasomotors

"Health in a broad and fundamental sense is dependent upon 2 essentials, namely:

1. The integrity of the vascular supply.
2. The equilibrium of the nervous impulse.

The Blood and Nervous Tissues, are the 2 masters that control the welfare of the body economy.

The 2 are so correlated that the blood supplies nourishment and the nerves control the nutritive process.

In just so far as disturbance to these tissues may arise will there be manifested in varying degrees a body condition termed disease.

Dr. Still said:

> *"A disturbed artery marked the beginning to an hour and a minute when disease began to sow its seeds of destruction in the human body. The rule of the artery must be absolute, universal and unobstructed, or disease will be the result."*

Vasomotor relations, like respiration and temperature, are one of the fundamental functions of living tissues.

> *"The vasomotor nerves keep the gates through which the blood flows to the tissues." - Dr W. T. Porter, MD in "Vasomotor Relations", Harvey Lectures 1906-7.*

When the vasomotor innervation is disturbed, a degenerative change in the vessel walls will follow with a consequent involvement of metabolism. (Oppenheim in "Nervous Dis.", Vol. II)

Anatomical Relations

The vasomotors are part of the so-termed visceral efferent division.

This division controls the smooth muscles of the blood vessels, the alimentary canal, the ducts of glands, the urinogenital system, the skin, and the eye.

The primary vasomotor centre is located in the bulb.

The subsidiary spinal cord centres are in the lateral horn.

There is not a direct connection between these centres and the smooth muscle fibres but intermediate neurons (sympathetic) are interposed.

Every vascular region has vasoconstrictor fibres.

The splanchnic region is especially important because it supplies so many viscera.

The next important region is that of the cervical sympathetic which supplies all the external and internal vessels of the head.

Probably the vasoconstrictors "originate principally in the anterior roots of the dorsal tract of the cord, pass by way of the rami communicantes to the ganglia of the sympathetics, and thence run directly or indirectly to the vessels where they form a fine plexus round the muscular tunica media." - Dr Carl P. McConnel, DO in JAOA, March 1912.

"A study of the diaphragm, therefore, in the light of osteopathic experience with the musculature of the body, and of its innervation and blood-supply, and an application of well-known osteopathic principles to the subject, would seem to be in place.

In other parts of the body the Osteopath makes much of muscular contractures or atony, of their interference with blood-vessels and nerves, of mechanical derangements or dislocations of organs and tissues.

May he not, then, apply such reasoning to the diaphragm, which occupies an important position, aids in carrying on important functions, and is related mechanically to organs, vessels, and nerves whose functions are concerned with the most vital operations of the body?

The importance of this subject becomes at once apparent when it is recalled that upon one hand the diaphragm is contiguous to the heart and lungs, that upon the other it is related to the liver, stomach, pancreas, kidneys, spleen and intestines, while it transmits to and from the abdomen such important structures as the aorta, inferior vena cava, oesophagus, thoracic duct, vena azygos major, vena azygos minor, pneumogastric nerves, phrenic nerves, splanchnic nerves, and small blood and lymphatic vessels.

To all of these structures it bears, directly or indirectly, a mechanical relation. We are also familiar with the fact that pressure upon a motor nerve leads to wasting of the muscles supplied by that nerve." - Dr Charles Hazzard, DO, in "An Osteopathic Study of the Diaphragm, its Relation to Abdominal Disease", The Practice and Applied Therapeutics of Osteopathy, 1901.

"Quantities of blood may be drawn to or away from a part of the body, and so arranged as to restore the equilibrium of the circulation, and equalize it throughout the vascular system to the best advantage of health.

In many cases our success , at the time of treatment, depends largely upon how we handle the blood-mass.

It is seldom , if at all , that the blood is affected locally alone. If affected at all it is en masse.

A congestion at one point means less blood somewhere else.

This is corrected only by proper rearrangement of the blood-mass, with a resulting restoration of vascular equilibrium.

Any manipulation of the body at once affects circulation.

Muscular motions given to the limbs, spine, or neck, simulate the effects of the

natural play of the muscles; squeeze and pump the blood and lymph out of the tissues and along their natural channels.

The periphery of the body is our great field. Wherever we treat it we affect the blood flow, directly or reflexly.

According to McGillicuddy, sensory impulses, resulting in reflex motor action may reach the vasomotor reflex centers through the sensory nerves of the cerebro spinal system.

Baruch goes even further in saying that probably all the sensory cutaneous nerves of the body congregate in the vasomotor centres in the medulla, where they connect with all the vasomotors of the arteries of the body; also that the nerves supplying the vessels of the pia mater experience a steady tonic excitation from the cutaneous sensory nerves." - Dr. Charles Hazzard, DO in "Osteopathic Manipulation of the Blood-Mass", JAOA 1904.

Lymphuria

"The term lymphuria, as explained in a previous communication (Med. Soc. Greater City of N. Y., 17 March 19I3) signifies an albuminuria which is due to the presence of lymph in the urinary fluid.

The study of the lymphatic system, especially as far as that of the abdominal viscera and the kidneys is concerned, has been greatly neglected; but since the beginning of this century a number of investigators have experimentally approached this subject.

According to Hermann Stahr's researches the lymph channels of the kidneys anastomose with those of the capsule, and thus there exists a lymph vessel communication between the caecum and ascending colon on the one side and the right kidney on the other.

The lymph vessels of the appendix, when this is adherent to the parietal peritoneum, also form a link in the anastomotic chain. On the left side, the intercommunication presumably occurs through the mesenteric channels.

Carl Franke injected the lymph vessels of the colon according to the method of Gerota and corroborating Stahr found that there exists a conununication of lymph vessels between the ascending colon and caecum (occasionally also the appendix) and the right kidney.

Although he could not positively demonstrate such a communication on the left side he points out the probability of anastomoses between the lymph channels in the mesocolon descendens and the left kidney.

The lymph channels of the kidneys lie in close proximity to the uriniferous tubules and, in fact, communicate with them.

There is hence no physical obstruction interfering with the possible transmission of lymph to the urinary fluid. Furthermore, the lymph may reach the previously formed urine without passing through the renal structure, as has been shown in a case reported by Havelburg.

That is to say, the lymph channels in the mucosa of the ureters and bladder, situated in close contact to their upper epithelial layers, may on comparatively slight provocation convey a part of their contents to the urine traversing the ureter, or to that already accumulated in the bladder.

At the bottom of the transudation of lymph into the urinary apparatus there must be an obstruction of one or the other colonic or mesenteric lymph channels.

On account of the mildness of the general symptoms exhibited by the lymphuric patient it may be rightfully doubted that there exists an obstruction in the thoracic duct itself. Such an obstruction would undoubtedly be followed by chylous ascites or other graver forms of chylous effusion.

Inasmuch as the amount of lymph escaping into the urine in a simple case of lymphuria does not exceed that of albumin in the average case of orthotic albuminuria, we may take it for granted that the lymphatic vessels involved are comparatively small and unimportant.

Again, as the discharge of lymph into the urinary fluid is an intermittent phenomenon, it is manifest that the occlusion of the implicated lymph channels is not a permanent one, and that it is dependent upon some perversity of intra-abdominal pressure as caused by posture, lordosis, general or localized colonic atony and its consequences, compression or any other mechanical factors.

The temporarily retained lymph stream prevented from draining into the surrounding veins either enters the blood current through newly established collateral channels in which eventuality no lymph would reach the urinary tract, or the overfilled lymphatics with their increased tension and the back-flow of lymph within, give rise to lymph varices at the site of least resistance, the minute superficial vessels of the urinary tract, and the oozing from these constitutes the clinical phenomenon lymphuria." - Dr Heinrich Stern, MD, in "Lymphuria and its Clinical Status", The Archives of Diagnosis, April 1913.

Chapter 10

Glands & Hormones

"The time is coming when there won't be any psychiatrists or psychologists left. The endocrinologist will eliminate us all. He will take all your 'mental diseases,' and explain them on the basis of misbehaving ductless glands and will cure them." *- Dr Southard, MD in "The American Journal of Psychiatry", January 1922.*

"We must also remember however that much of the toxic materials generated especially in the lower ileac region are taken up by the lacteals and carried directly into the circulation through the thoracic duct which empties directly into the circulation by way of the subclavian vein, and thus directly into the blood stream. Therefore every cell and tissue of the body is thus fed for a time with impure and vitiated blood. This may be one of the main causes for endocrine deficiency or endocrine dysfunction. Dr Alvarez's thought that the stasis must be corrected and a proper motor gradient in the intestinal canal be established so that there will be no time for the absorption of toxins." *- in "Mid-west Homeopathic News Journal", Vol.5-6, 1932.*

Ductless Glands

The Ovarian and Thyroid Functions Compared

"The researches along the line of the Ductless Glands, and Internal Secretions are constantly proving more illuminating.

Dr Goodal, and Dr Conn, have drawn the following statements concerning the relation between the thyroid gland and the female generative organs:

1. The relation between the female genitals and the thyroid is very intimate.
2. The generative organs which stand in such close relation with the thyroid are the ovaries.
3. That the uterus is devoid of any influence upon thyroid activity except in that its function may affect the ovarian function and through this the thyroid.
4. Thyroid activity is in a measure under the governance of ovarian activity.
5. Ovarian hyperactivity is a frequent cause of the development of exophthalmic goiter.

6. Diminished or absent ovarian activity usually coincides with myxedema (severe hypothyroidism).

7. Puberty, menstruation, pregnancy, lactation, and menopause exercise a profound influence upon thyroid secretion.

8. Thyroid secretion and ovarian secretion do not supplement each other; they neutralize each other.

9. The ovary has two secreting structures – the corpora lutea and the interstitial cells.

10. It is the secretions from the latter which seem to bring the ovary and thyroid into such close relation." - in "The Medical Summary", August 1916.

Hormones

"But organs of the emunctory system fulfil also other non-specific functions, as the removal of hormones in excess and by doing that, they maintain the normal integrity of the organism." - in "Universita Karlova", Fakulta lékařská, 1978.

The working of the glands is of paramount importance on the health state and on the longevity of the physical body.

The following hormone Oxytocin plays an important role in the body, it is best produced by the physical sense of touch, or a hug (heart to heart), where a physical contact of care, of friendship, of help, of community is expressed.

Oxytocin is produced by the paraventricular nucleus of the Hypothalamus deep inside the mammalian brain, and stored in the posterior section of the pituitary gland—the "master gland" of the endocrine (hormonal) system, and released by the posterior pituitary. Oxytocin is a peptide hormone and neuropeptide.

Oxytocin and the Potency of Touch

"The potency of touch in osteopathic manipulative treatment is physically realized within the musculoskeletal, immune, nervous, and endocrine systems. Psychologically, touch supports a verbal and tactile interaction that is both diagnostic and therapeutic.

The relationship between touching and being touched offers a potentially powerful and intense deepening of the patient-physician relationship that emerges within the palpatory examination and treatment. Empathic communication, through word or deed, allows a therapeutic, synchronized healing to occur.

The skin is the largest of all organs, is in a constant state of alertness, focusing in every direction simultaneously, ready to report, react, process, touch and be touched, learn, and survive.

Touch is a basic human need, without which humans fail to bond, thrive, or form meaningful attachment to others.

Being touched begins with the feeling of contact. It can be localized and evaluated with regards to intensity, duration, and quality - from feeling poked to feeling stroked. With higher levels of processing, the touch may be imbued with affective and evaluative qualities, as well as interpreted in terms of past experience and learning.

If there is a sense of trust, the brain is primed to release Oxytocin while being touched." - Dr Mitchell L. Elkiss, DO; Dr John A. Jerome, PhD in "Touch: More Than a Basic Science", JAOA, Vol. 112, 2012.

The 2 Systems that Regulate and Coordinate Body Functions

These are the 2 Control Systems in the body:

1. Nervous System
2. Endocrine System

The Nervous System, and the Endocrine System:

1. Regulate, and
2. Coordinate

Body functions by sharing in a unique partnership.

Jointly they maintain:

1. Growth
2. Maturation
3. Reproduction
4. Metabolism
5. Human Behaviour

It is also important to note that:

1. Subluxations along the spine (Cerebrospinal Nerve System)
2. Glandular In-Coordination
3. Toxaemia

These are 3 of the most common ailments in the causation of disease.

The Endocrine Glands and Internal Secretions

General considerations regarding internal secretions and the organs which furnish them:

"Material which is passed into the blood or lymph from any tissue or cell of the body forms what has been termed its internal secretion, and organs which are not known to possess any other function than that of passing such material into the blood or lymph are termed internally secreting or endocrine organs.

But this term is not usually extended to organs like the lymphatic glands of which the material production is of a morphological character, although until recently all such organs used to be included along with the true endocrine glands, the functions of which were at that time unknown, in the general expression of ductless glands.

Under this last term were comprised not only the thyroid (to which must be added the parathyroids), the suprarenal capsules or adrenals, the pituitary body or hypophysis cerebri, and the pineal gland or epiphysis cerebri, to which we now commonly ascribe internally secreting functions, but also the thymus gland, the tonsils, lymph-glands and lymph-follicles, and the spleen; with these the bone-marrow must also be associated.

Regarding the thymus gland, although some evidence has been adduced that it may yield an internal secretion to the blood which exercises a specific action upon the functions of growth and development, especially of the generative organs, it appears both developmentally and structurally to present undoubted resemblance to the tonsils, which are universally allowed to be structures of a lymphatic nature, and most of its cells are lymphocytic in character.

By the expression "endocrine gland" we imply an organ which is known to form some specific chemical substance within its cells and to pass this directly or indirectly into the blood stream.

The substance thus formed is the active material of its secretion, just as ptyalin is the active agent of the salivary secretion.

But while in the case of the salivary glands the secretion is conducted by a duct to the exterior, in the case of the ductless glands the secreted material remains within the body and circulates with the blood; hence the term "internal secretion" commonly applied to it." - Sir Edward Shafer, in "An Introduction to the Study of the Endocrine Glands and Internal Secretions", 1913.

The Importance of the Hypothalamus Gland

The hypothalamus is a portion of the brain that contains a number of small nuclei with a variety of functions. One of the most important functions of the hypothalamus is to link the nervous system to the endocrine system via the pituitary gland, another major function of the hypothalamus is to maintain homeostasis, keeping the human body in a stable, constant condition.

The hypothalamus is responsible for the regulation of certain metabolic processes and other activities of the autonomic nervous system.

It synthesizes and secretes certain neurohormones, called releasing hormones or hypothalamic hormones, and these in turn stimulate or inhibit the secretion of hormones from the pituitary gland.

The Interaction of the Glands of Internal Secretion

"A portion of the nervous system, as is known, governs principally the vegetative functions; another, the functions of the heart, of the intestines, and the metabolism. Since glands of internal secretion control the internal metabolism, it is to be expected, a priori, they will control also these portions of the nervous system.

This is, indeed, a fact.

Among the symptoms of Hyperthyroidism the majority point to a hyperirritability of the sympathetic nerves. So, also, adrenalin exerts its chief influence upon the nerve endings of the sympathetic system.

So, too, puncture of the medulla causes glycosuria probably by stimulating the cells of the Chronaffin System (the reaction of cells of the adrenal medulla and elements topographically and developmentally associated with sympathetic neurons - particularly in the pre- and paravertebral chains and plexuses of the abdomen), to an increased secretion of adrenalin.

The mechanism, then, I conceive to be, that a period of excitation is established in the nerve centres of the 4th ventrical, from which impulses are sent by way of the splanchnic nerves to the Chromaffin System. On the other hand, we observe that the internal secretion of the pancreas is associated with the tonus of the autonomous vagus.

Important facts indicate that certain drugs which have a stimulating effect upon the vagus increase the internal secretion of the pancreas.

One sees, therefore, that the interaction of the glands of internal secretion is paralleled by the relation to the sympathetic nervous system; finally, that there are relations with the muscular apparatus is evidenced by the excessive hyperirritability of the motor neuron, which results from failure of the parathyroids the glands of internal secretion form, as the numerous close inter-relationships of these glands suggest, a connected organic system." - Dr Wilhelm Falta, MD, in "Concerning Diseases that Depend on Disturbances of Internal Secretion", The American Journal of Medical Sciences, 1909.

Psychogenesis & Internal Secretion

"It has recently been shown, through a brilliant experimental research by Cannon, of Boston, that the emotion of fear in animals is capable of stimulating the flow of adrenal secretion.

He demonstrated that in frightened animals the blood from the adrenal vein is so rich in adrenal substance as to be capable of inhibiting peristalsis in an isolated strip of intestinal muscle.

This is due to the presence, in appreciable amount, of adrenal substance, since contact of the latter, in a 1:1,000,000 solution, with the intestinal strip will also inhibit peristalsis.

We knew that the emotion of fear could inhibit gastric secretion; and Pawlow has shown that certain emotions of anticipatory joy can induce a flow of this secretion. Crile has shown, experimentally as well as clinically, that the emotion of fear increases the thyroid secretion; he demonstrated this clearly in certain cases.

Although we have been in the habit of regarding the autonomic nervous system as rigidly autonomic, these experiments show that the sympathetic fibers are somewhat under cerebrospinal control, because in each of the experiments the autonomic symptoms have occurred in virtue of the impressions upon the cerebrospinal nervous system.

It is reasonable to suppose that fear, which, when acute, such experiments have shown capable of exciting the autonomic nervous system and the glands thereto attached, may, when it takes the form of a chronic fear, also produce, less abundantly, but to an extent clinically manifest, an overaction of the autonomic nervous system and through it of the glands it controls.

I have seen cases of Addison's disease in which autopsy showed an atrophy of the adrenal-gland substance.

Hypoplasia follows hyperactivity of the thyroid gland as described by Wilson. Their prolonged anxiety, demanding much adrenal juice for its pressor effect, would lead to eventual exhaustion of the gland and the hypoplasia found post mortem in my cases.

In these low-pressure cases, adrenal substance has been beneficial in my hands. But a wise hygiene are also required to prevent continued exhaustion. Such cases can later remain well without taking adrenal when properly re-educated.

Thus, additional clear, physical intercorrelations of mind and body have been experimentally demonstrated, giving rise to inferences which explain what was formerly conceived of so vaguely. From these it will not be difficult to evolve practical means for the relief of suffering and the cure of disease." - Dr Tom A. Williams, MD in "Monthly Cyclopedia and Medical Bulletin", Vol.5, 1912.

The Relationship of the Thyroid Gland to Alimentary Toxaemia

"The relationship of the thyroid gland to alimentary toxaemia, is as intangible as any. Evidence is accumulating to show that among the many functions of the thyroid gland, One of the most important is a protective action against circulating toxins.

Complete removal of the thyroid leads not only to myxoedema, a condition which may be partly or completely cured by the administration of its internal secretion, but also, as is well known, brings with it a considerable risk of a rapidly fatal toxaemia.

An important manifestation of this toxaemia is the symptom-complex known as tetany.

On very good grounds, tetany is thought by many to be produced by toxins generated in the alimentary canal.

We have, then, in tetany a condition which on the one hand is produced by removal of the thyroid gland, and on the other is related to alimentary toxammia.

It seems, therefore, a reasonable inference that the thyroid gland among its antitoxic functions includes that of combating poisons absorbed from the intestinal tract.

In cases of excessive absorption of alimentary toxins we should expect some compensatory hyperplasia of the thyroid gland, and it is interesting that in the course of this discussion Lane, Rowell, and Carson, all stated that they have seen ileosigmoidostomy followed by shrinking of a goitre.

Another clinical link in the chain of evidence is afforded by rheumatoid (sometimes known as infective) arthritis.

The disease is not uncommonly accompanied by enlargement of the thyroid gland, by Graves's disease, and by tetany, or a condition of the hands and feet closely resembling it.

It is also regarded by many as an effect of oral sepsis or intestinal intoxication. An important support of this view is the work of Kenneth Goadby on the subject.

Points which favour this contention are the almost invariable presence of oral sepsis, the beneficent effects, sometimes leading to complete cure, which follow attention to the mouth, the improvement after lavage of the colon in some cases, and in a case recorded by Lane after ileo-sigmoidostomy.

In rheumatoid arthritis, then, we have a condition probably in many

cases due to alimentary intoxication; in this condition overgrowth of the thyroid is apt to occur, and tetany, a symptom of ineffective functioning of the thyroid gland, is also found.

Moreover, rheumatoid arthritis is occasionally distinctly benefited by the administration of thyroid extract.

Rupert Farrant has studied the effects of several types of clinical toxaemia upon the thyroid gland.

The following changes occur:

1. The colloid becomes granular.
2. Vacuolated and partially absorbed.
3. The cells become more numerous, elongated, and arranged in masses.
4. The colloid is entirely absorbed and the walls of the vesicles become crenated and folded.
5. The infolding and cell increase go on to transform the vesicles into solid masses of cells.

In other words, there is a reaction of the thyroid gland, with signs of hyperplasia and increased functioning, amounting in some cases to changes like those found in Graves's disease. This holds true for such diverse toxaemias as those of infantile diarrhoea, diphtheria, measles and broncho-pneumnonia; and whooping-cough, and bronchopneumonia.

A similar hyperplasia was caused in guinea-pigs by the injection of diphtheria toxin, but was mitigated if thyroid was given at the same time.

The thyroid is a gland, a useful function of which is to counteract intoxication.

One of the sources of the intoxication is the bowel.

If the intoxication be proportionately great for the gland, it undergoes hyperplasia and visible enlargement. If the amount of intoxication can be lessened, the extra burden is removed and the gland diminishes.

This has been done by the use of thymol and of vaccines, especially those prepared from cultures of the coliform organisms obtained from the patient's own intestinal flora." - Dr. Frederick Langmead, MD in "Proceedings of the Royal Society of Medicine", 1913.

The Thyroid Gland and the Toxemias

"For the purpose of clarity, Bainbridge (Illinois Med. Jour., Sept., 1921) has divided thyroid conditions into 7 classes:

Class 1. Mild types of thyroidism which clear up when the toxic elements of the system are removed, as:

a) The atrophic gland, with small isthmus, which may increase in size and function when the toxemia is relieved.

b) The hypertrophic gland which may function normally when the intestinal stasis or other toxic condition is removed.

Class 2. In this class hyperthyroid conditions may be present for a long time, until a sudden nerve strain, a fright, or an aggravation of the toxic elements may cause acute and pronounced symptoms, often with obvious goiter.

Class 3. This class includes the cases in which the thyroid is so atrophic that treatment for toxic conditions alone will not relieve the patient and thyroid treatment must be instituted and sometimes continued indefinitely.

Class 4. These patients have not only a chronic hyperthyroidism, but a marked increase of thyroid activity, because of an acute, or a subacute, abdominal condition. They may be cured by operation upon the alimentary tract.

Class 5. In this class are placed the cases in which degeneration of part of the gland has occurred and irritates the remainder, causing hypersecretion. Operation on the goiter is necessary to lessen the abnormal stimulation of the gland.

Class 6. In this group we have pronounced systemic goiter where operation is indicated and where abdominal conditions also require surgical interference to effect a cure.

Class 7. These are cases with marked thyroidism, large or small gland, but demanding operation. The system is so thoroughly poisoned with thyroid toxins that the necessity of ligation, or some other form of thyroidectomy, is absolutely indicated. Often the patient is so toxic that a period of preparation for operation is required. Here a careful realization of the complexity of the toxic state may be of aid. Lessening of the hyperthyroidism, by topical applications of ice to the neck, physical and nerve rest, eliminating possible acidosis by alkalies and free catharsis, is often of advantage. **In addition, the use of alkaline colonic irrigations, and attention to any focal infection may prove of distinct value.** This class needs no examples. It is mentioned because a realization of the handicap from focal and especially intestinal toxemias in pronounced' systemic goiter may aid materially in reducing mortality.

Epileptiform Manifestations in Endocrinous Disorder

Leahy, in his interesting article in the New York State Journal of Medicine (January, 1922), gives the following conclusions:

1. There appeared to be a definite relation between deficient ovarian secretion and epileptiform attacks.
2. There appeared to be a definite relation between dyspituitarism attended by deficient secretion and epileptiform attacks.
3. Practically all of the cases showed more than one glandular involvement.
4. Striking physical abnormality was absent, except in one case.
5. The failure of the attack to disappear entirely in some cases may be due to the effect that glandular involvements other than those established were over

looked, and therefore not medicated, or established of the epileptic habit rendered this form of discharge of energy more difficult to control after being present for some time.

6. Transitional forms of various endocrinous disturbances should be sought for in every case of Epilepsy.

Emotion as a Factor of Hyperthyroid States

Altho in exophthalmic goiter, hyperfunction of the thyroid glands is the essential factor, and upon this point there seems now to be no question says a writer in Medical Record (11 March 1922), Maranon (Annales de Medecine, 1921) considers that our theories in respect to the pathogenesis do not attribute sufficient importance to emotion as a causative factor. Only the most recent works, especially A. Kocher's article in Kraus und Brugsch's, "Spezielle Pathologic und Therapie", expressly mention violent emotional shock and prolonged emotional states, besides physical traumata, as factors.

In a study of 159 cases of Graves disease, Maranon has at tempted to discover the determining cause of the affection, and he has found that in 48 cases an intense emotion coincided with the outset of the morbid disturbances.

This observer, how ever, is categorical in his statement that emotion only was not the causative factor, but was the cause of the outburst of a pre-existing latent hyperthyroid state, because he expressly states that in, the vast majority of the cases (41) the patients presented a marked predisposition, viz., emaciation without any manifest cause with exaggerated affective and neurotic tendencies, paroxysms of gastric hypersecretion, etc. The emotional factor is hence not in itself sufficient other than in a small proportion of cases; in the others a constitutional element is in play. As to the mechanism of the relation ship between emotion and the hyper thyroid state the action of the endocrine glands must be admitted, and Maranon refers to Cannon's experiments and his own in which a glycosuria or hyperglycemia was noted following an emotion.

Upon injecting small doses of adrenaline, ¼ to ½ milligram, exaggerated reactions ensue and it may be supposed that the hyperthyroid state produces a condition of sensibilization of the vegetative nervous system which at least partially constitutes the emotive predisposition, and the adrenalin suddenly secreted on account of the emotive out burst, gives rise to the appearance of the characteristic changes depending up on the emotion.

It is probably because of this that patients with Graves disease are so sensitive to emotions and why a latent hyperthyroid state may become converted into a serious condition from an intense emotive attack, while less frequently a violent emotion or a series of emotions may transform a normal individual into a hyperthyroid subject.

Prolonged depressing influences, far more than a single violent psychic shock, are the cause." - in "American Medicine", June 1922.

Hysteria & Hyperthyroidism

"In reference to the preceding article the following abstract from the Madrid Medical Journal "Plus-ultra" for which we are also indebted to the JAMA is of considerable interest.

The author, Dr. C. Juarros, MD declares that every day he encounters more and more persons whose disturbances have been ascribed to hysteria with the consequent therapeutic indifference, when in reality closer study of the case reveals excessive functioning of the thyroid as a factor. This hyperthyroidism can be easily cured or at least much attenuated when the thyroid symptoms are discovered: tremor, sweating and mononucleosis, besides the usual triad of tachycardia, palpitation and the ocular signs. The tremor is rendered evident by having the patient extend his arms and hands, spreading the fingers. A sheet of paper laid on the hand renders plainly manifest any tendency to tremor.

Hysteria can be excluded by the mentality, the hysteric character being easily recognized, so that, he says:

"there is no excuse for labelling as hysteria every feminine neurotic manifestation."

The instability of the thyroid may induce attacks of hyperthyroidism which may simulate in every respect the phases of a neurosis with the arthritic constitution.

The excessive thyroid functioning may even entail obsessions, phobias, hallucinations and delirium, still further confusing the diagnosis.

He has recently seen a case with the set of symptoms described by Block in 1912, and it yielded to antithyroid treatment.

The patients in this category the pigmentation is a characteristic symptom, most marked in the muscles, cheeks and side of the brow. They are selfcentered, melancholy and irritable, complain of fatigue and insomnia, and are doomed to suffer incurably so long as hysteria is regarded as responsible.

A prompt cure in all these hyperthyroid cases may usually be realized under antithyroid plus ovarian treatment, with calcium salts and sodium cacodylate as adjuvants. The main thing is to give adequate doses and persevere long enough." - in "The Medical and Critic Guide", July 1920.

The Glands & Internal Secretions

"On 4 June 1917, Charles Eucharist de Medicis Sajous, MD was elected the first president of the Association for the Study of Internal Secretions (ASIS).

A few years later he was also the first in the United States to he named to a professorship specifically in endocrinology at the University of Pennsylvania.

Some call him the "father" of American Endocrinology.

Sajous thought that epinephrine was the key to all life processes, that the intermediate lobe of the pituitary was a sense organ for toxins in the body, and

that the thyroid gland was a repository of white cells which, on release to the blood stream, carried an organic form of iodine to the body's tissues where it maintained tissue oxygenation." - D. Lynn Loriaux in "A Biographical History of Endocrinology", 2016.

The Ductless Glands and The Principles of Health

by Dr Charles Eucharist de Medicis Sajous, MD, 1922

"Nearly 20 years ago Sajous published his work on the glands of internal secretion in a quite different form, but in a form required by the conditions of medical knowledge of the time. It was a monumental work and although it received tardy attention it contained the basis of the study of the glands of internal secretion, and it pointed out their influence upon the conditions of health and the conditions of disease.

Sajous was the disciple of Brown-Séquard, Claude Bernard, and Berthold of Göttingen, but he took it upon himself to greatly extend their studies and co-ordinate his own investigations with the reports which appeared in the literature.

The readers of this magazine will find every page of these 2 volumes full of conscientious observation and discussion and yet I fear many readers will not have an opportunity to read the whole book.

Therefore I take the liberty of reproducing a considerable portion of Chapter 7, in which the author discusses the subject of dementia praecox.

Although dementia praecox (schizophrenia) represents about 25% of the admittances to al insane asylums, 50%, the figure given by Bayard Holmes as representing the proportion of cases in Illinois, is probably nearer the truth for the country at large.

This figure may certainly be adopted as the probable one if to the asylum cases we add those in private institutions and those at their own homes, including the thousands on the border line which either have not as yet been recognized as victims of the disease, or belong to the simpler troup of "apathetics' and 'indifferents.'

In other words, one-half of our insane of both sexes are recruited from adolescents. And this does not include another large class, that of the feeble minded—an important distinction, for the candidate for dementia praecox is not infrequently unusually intelligent, and finds his or her mental doom in overstudy.

A few years ago, Bayard Holmes (Medical Fortnightly, 26 Jan., 1914), criticizing the purely psychogenic doctrine of the disease, wrote:

> *"One might as well talk to the alienist of death and its prevention as of dementia praecox and its cure. To the psychogenist, dementia praecox is the result of "twisted idea" of some sexual nature which upsets the whole organism. It disturbs adaptability, destroys emotion, paralyzes volition*

and precipitates a physical and mental degeneration and dissolution. The 15,000 youths of high school age who go into the madhouses of our continental empire every year, leave all hope behind. During the first year of incarceration they have a very high death rate, almost 100 per 1000: but if they survive this critical period, they live about seven years in custody, and 54% of these die of tuberculosis".... "Another 20% become mute, inactive, catatonic, "untidy" and curl up polluted every day in their own offal, to die of starvation, bed-sores, and intercurrent disease."

This new era he connects with what he terms "a most remarkable phenomenon" discovered in 1912 by the Swiss biochemist Abderhalden (Defensive Ferments, 1914), viz., that toxic albumins of endogenous or exogenous origin provoke in the blood a defensive reaction consisting in the reduction of these toxic albumins to a peptonoid or soluble form which enables them to be readily excreted by the kidneys or liver.

The active agents in this process Abderhalden termed "defensive ferments", which he deemed similar "to those secreted by the digestive glands in the intestinal canal."

Before Abderhalden, I (Sajous, "Internal Secretions and the Principles of Medicine" vol. I, pp. 608–745; Vol, II, pp. 885-907, 1907) published in the present work similar conclusions to his, concerning the rôle of digestive ferments and certain ductless glands in cellular metabolism and defensive functions, differing only from his independent observations in that certain leucocytes were factors in the process. The fact that from two independent directions, identical results should be obtained, indicates the strength of the position as a working basis.

The Abderhalden reaction itself, which can be performed in the test-tube, is familiar to everyone. Now this reaction has shown distinctly that the various ductless glands, including the sex glands, were the seat in dementia praecox, of abnormal activity, the thyroid for instance showing the characteristic picture of hyperthyroidia or exophthalmic goiter.

Various authors had tentatively suggested that the ductless glands had something to do with dementia praecox, some suggesting overactivity, others deficient activity of one or more glands, without working out the nature of the process involved. On the other hand, several authorities, notably Régis, Kraepelin, and Dercum, have attributed dementia praecox to some form of toxemia. We shall see presently both the nature of the endocrine process and the source of the pathogenic toxin.

Very suggestive also was the fact demonstrated by the Abderhalden reaction, that the various ductless glands were the seat in two-thirds of the cases of dementia praecox, of degenerative processes.

The existence of such lesions is well shown by 8 cases carefully examined postmortem by Dercum and Ellis (Jour, of Nerv. and Mental Dis., May, 1913), who conclude their valuable study with the following statement:

"Without attempting an interpretation of the histological conditions, we are at least justified in the conclusion that in our cases there was in all probability a disturbance of what Sajous has called the "adrenal system," i.e. of the chain made up of the pituitary, the thyroid and the adrenals. Especially was change noted—e.g. striking departures in weight—in the thyroid and adrenals. Now Sajous has pointed out that in tuberculosis there is an inadequacy of this adrenal system and the thought naturally suggests itself that these 8 patients suffered from dementia praecox for the same reason that they subsequently suffered from tuberculosis; that is because of an inadequacy or abnormality of their adrenal systems. It is rather a remarkable fact that the almost universal cause of death in dementia praecox is tuberculosis and if the feebleness of resistance to the tubercle bacillus is due to a fault of the adrenal system, we have reason to infer that this fault pre-existed and that it is one of the factors in the makeup—the morphology—of dementia praecox."

This conception is of value in the sense that it gives us, poised on sound histological facts, the culminating or terminal features of dementia praecox, e.g. breaking down of the ductless glands, with tuberculosis as result, because by provoking degeneration of these organs, the disease or its causes reduced the efficiency of the systematic defensive mechanism and made the body vulnerable to infection.

It is not, with this terminal stage of the disease, a 'feebleness of resistance' due to faulty endocrinic activity, however, that we have to deal, but with a gradual destruction, by the disease itself or its causes, of endocrinic efficiency.

But how can dementia praecox or its causes bring this about? Herein lies, it seems to me, a fundamental feature of the disease and a clue to its rational interpretation. In order to make this clear it is necessary to review, though very briefly, the functions of the various ductless glands involved as I have interpreted them. We have seen in earlier chapters that it is clearly through the adrenal secretion that the venous blood is converted into arterial blood and that the life of every cell, including nerve cells, is sustained.

Another function of the adrenals of importance in this connection, however, is that concerned with the destruction of various poisons, including toxic wastes, pointed out by Albanese, Abelous and Langlois, and sustained by others since.

We have but to recall the vulnerability of cases of Addison's disease and the various forms of adrenal insufficiency to intercurrent infections to realize the importance of this defensive rôle.

Now these two functions, respiratory and antitoxic, bear directly, as we shall see later, upon the pathology of dementia praecox, for while, as will be shown farther on in this work, adrenalin laden - or better, oxyhaemoglobin laden - plasma circulates (as does tenanotoxin), in the axic-cylinders, cell-body and fibrils of nerve cells. the antitoxic virtues of this plasma are also brought into play through the presence therein of the adrenal principle.

As to the thyroid, I need but recall its paramount rôle in metabolism, which in Kendall's words:

> *"Are so great that practically every cell within the animal organism is changed. The effects are felt throughout the nervous system and the circulatory system; the rate of metabolism is enormously increased."*

There is one feature of the process, however, that is also of cardinal importance in dementia praecox besides its influence on the nervous system—through which it circulates likewise from my view point—and that is the marked influence of thyroid on the catabolic phase of metabolism.

This is well shown by its action as an antifat, so abused at one time.

It first attacks the fats, then the other tissues when administered in excessive quantities and the body steadily dwindles down until dangerous cardiac symptoms appear.

But this stimulating action on catabolism has its good sides and this is a third feature bearing directly upon dementia praecox.

Briefly, the same action through which the thyroid secretion breaks down metabolic wastes causes it also to break down bacteria, toxins, and other organic poisons.

It thus becomes a defensive action. We have seen that the thyroid hormone in this connection is in reality what Sir Almroth E. Wright had termed opsonin and the sensitizing agent in our body fluids, both the plasma and phagocytes.

This view has also been confirmed. Léopold-Levi and H. de Rothschild (Physiopathol of the Thyroid Gland, vol. II), for instance, write:

> *"Sajous has attributed, among the functions of the thyroid body, a rôle to the latter which he assimilates to that of opsonins and autoantitoxins. More recently, Fassin of the Bacteriological Institute of Liége, and Stepanoff and Marbé of the Pasteur Institute of Paris, have confirmed on their side the influence of the thyroid on the blood's asset in alexins and opsonins."*

Others have also adduced evidence showing that the thyroid product influenced favourably autointoxications and infections of various kinds.

The thymus, as we have also seen, does not, as generally taught, disappear at puberty. It begins to diminish rapidly at that time and by the 25th year has atrophied to about one-fifth of its former dimensions, retaining a relative proportion of functional parenchyma. Thence on it disappears very slowly until about the age of 60, when but a small remnant, containing usually parenchyma, is left.

Several salient physiological facts connect the thymus with dementia praecox. In the first place, absence of the thymus is almost constant in noncretinic idiots, 302 times in 408 cases examined postmortem by Morel (Paris Med., lv., 161, 1914),

28 times in 28 cases examined similarly by Bourneville. In the second place, though classed as a lymph gland, the thymus is 5 times richer in nucleinates than the latter; and it is these nucleinates (which contain 3.7% of phosphorus) that the thymus, through its migrating cells, the thymocytes, supplies to the nervous system at large, including the brain and the bones.

Hence my conclusion (Internal Secretions and the Principles of Medicine, 1916) many years ago, that the function of the thymus was to supply the excess of phosphorus in organic combination that the body requires during the development of the child.

It is, in other words, the fundamenta ground substance for the fats (the myelin, lecithin, etc., and nucleins) of nerve cells. The third and last feature which bears directly upon dementia praecox is also often overlooked, viz., that the thymus depends for its efficiency upon adequate feeding and upon conservation of its supply of nucleinates to preserve the functional integrity of the tissues it supplies.

We shall see presently the bearing of this phase of the question in point.

That a toxaemia is an exciting cause of dementia praecox is now accepted by many observers. Severe infections, pregnancy, the puerperium, the climacteric, severe mental stress, traumatisms, excessive exertion, fecal stasis and autointoxication, are some of the causes of toxaemia found in the histories of the cases. A suggestive feature in this connection is that this list corresponds exactly with that which endocrinologists have worked out as the leading etiological factors of hyperthyroidia and its most advanced type, Graves's disease.

Etiologically, simple goiter also shows kinship with both dementia praecox and exophthalmic goiter.

Familiar also is the goiter of adolescents so common in our schools, another point of resemblance with dementia praecox. Again, many years ago W. Hanna Thomson in a campaign against a relationship between the thyroid and exophthalmic goiter, attributed this disease entirely to a toxaemia of intestinal origin, recommending purgation and appropriate diet to cure it.

In dementia praecox, the same series of events occur.

The intestinal tract is undoubtedly a prominent offender. As worked out by Bayard Holmes and his associates (Trans. Research Lab. of Psychop. Hosp., Ibid, p. 202, 1918), a toxin is produced by the growth of organisms of the colon group upon unassimilated food proteins either in the cecum, owing to prolonged stasis therein or beyond the ileocecal valve.

The cecal stasis is such, he states, that as observed by fluoroscopy and a progressive barium meal, the latter may be found to remain (thus typifying the fecal mass) from 54 hours to 3 weeks in these intestinal areas. In one of my own patients a 48 hour fecal stasis, probably with a stationary mass, observed with barium meals and repeated x-rays, sufficed to provoke a severe form of the disease.

In this particular instance, I was able to verify the truth of the following statements as regards “remarkable improvement” (the patient has now been well 2 years) also by Bayard Holmes, who refers to “Remarkable improvement and even

recovery in few patients treated by appendicostomy and protracted irrigation of the cecum and colon with large quantities of water. By this direct and positive method", he states, "the attempt has been made to arrest the production of toxic amins in the cecum and diminish the amount of the toxic substances absorbed."

In the personal case referred to above the appendix had been removed some time before; cecostomy was therefore performed for me by Professor Ernest Laplace, and irrigation of the cecum and colon carried out through a rubber catheter introduced into and kept in the cecal opening. Instead of using plain water, however, for the irrigations, I advocated the use of warm saline solution—much of which was retained—my reasons for the change being as follows:

Professor N. Ishida (Amer. Jour. of Insanity, vol. 73, p. 542, 1916-17.), of the Nagasaki Medical College, recalling the fact that Kraepelin (Psychiatrie, 8th ed. vol. I, p. 623) had found experimentally that sodium chloride infusions caused "an increased feeling of hunger and thirst accompanied by a regular improvement of the general health tried their use in dementia praecox, using a 0.09% solution intravenously where possible, in quantities ranging from 300 to 1000 grammes repeated, where this was done on an average of 4 cases about every 12 days or 3 times out of the 10 cases studied, and, in one instance, in 39 days.

In one case, there was no change excepting a temporary increase in interest; in 3 there was lasting improvement; in 4, remissions lasting from 1 to 3 and one-half months; in one, sufficient improvement to warrant discharge.

Of another series of 15 cases treated in the same way, L. V. Guthrie (W. Va. Med. Jour., Dec. 1917) gave the following results: 10 cases, very unclean before treatment, were improved in this respect.

In 8 cases, there was an awakening of interest in work, directly following the treatment, and in 7 of these cases, this has continued.

Remissions occurred in 6 of the 15 cases but these improved again on reinjection of the solution; 7 cases have greatly improved without remission.

One apparent cure, without remission since treatment was commenced 5 ½ months ago. Second apparent cure without remission for 3 months. This case has put on 25 pounds in weight and improved mentally to a surprising degree.

All 15 cases showed increase in appetite for food and all gained flesh.

A feature to which special attention must be drawn is that Ishida observed following the first infusion in some cases, what he terms:

> *"A fever of unknown origin' ranging from 39.6 degrees to as high as 40.5 deg. C., followed by excitement in two instances, which may, he thinks, have been 'the result of defective sterilizing methods. Yet, the occurrence of fever in some instances after the infusion is not without significance, since the mental status of patients with endogenous dementia has often been noticed to have improved after the occurrence of fever."*

In "Internal Secretions and the Principles of Medicine," Vol. II, 1903, I stated referring to sodium chloride:

"When the supply is inadequate, all the functions are hampered, since it is the solvent of adren-oxidase (serum globulin). By holding the katter in solution it insures its free circulation as a constituent of the plasma in all vessels down to the minutest capillary networks distributed to cellular elements, including those of the nervous system:
The axis-cylinders and other neuro-fibrils, the networks of neurons, their dendrites, etc. This also enables the adren-oxidase-laden plasma to transude freely through the capillary walls in order to reach the tissue-cells, i.e. to carry on the life process. The free osmotic properties which the lymph in the tissue-spaces also owes to sodium chloride insures another important function, viz., that of sweeping away by the lymph-current of all wastes derived from the cell."

The fever referred to by Ishida thus finds a normal explanation: the defensive properties of the blood plasma and its cells being enhanced by the saline solution, an exacerbation of antitoxic activity, i.e., fever resulted, followed by improvement. In other words, what benefit was derived from this method - **and I have seen improvement result in other cases from large colonic irrigation with saline solution -** was due to the general destruction of the causative toxics and a temporary arrest of their injurious effects upon the cerebral cells.

To this must be added a similar action with improvement of osmosis in all tissues including the duct less glands, thus facilitating the liberation of the secretions of the latter.

This means restoration of general metabolic activity besides the resumption of antitoxic power - salient functions, we have seen, of the thyroid and adrenals.

A toxaemia, demonstrable by much available evidence from various sources, being accepted as a cause, what is its relationship with the physical symptomatology of the disease?

Petersen (Nervous and Mental Dis, p. 828, 1908) states:

"The physical disorders of dementia praecox have no pathognomonic value, though many have been studied and described. Among them are attacks of syncope, epileptiform, apoplectiform and hysterical seizures, localized spasms, tetany, transitory paralyses, aphonia, singultus, choreiform movements, athetoid ataxia, aphasia, exaggerated reflexes and increased mechanical irritability of the muscles, dilated pupils usually; vasomotor disorders (cyanosis, oedema dermographia, hyperidrosis); increased salivary secretion; pulse slow or rapid, often weak and irregular; subnormal temperature, amenorrhoea, diffuse enlargement of the thyroid gland; anaemia; emaciation in acute and subacute conditions, but rapid increase in weight in the later stages."

To these I shall add a few other familiar symptoms to emphasize special points.

It must be granted that an interpretation of a morbid process capable of explaining all the physical signs of that process must be fundamentally sound.

This attribute the explanation submitted seems to me to possess, as we shall see presently, after outlining what to me is the secret of the disease.

Given a pathogenic toxic that is absorbed into the blood, it evokes, from my viewpoint, a defensive reaction in various ductless glands, the thyroid and adrenals in particular. Sometimes the thyroid is sufficiently enlarged to be noticeable before exhaustion atrophy has occurred in the organ.

The adrenals have been found enlarged postmortem by Parhon and Zugravu (Arch. de Neurol., Nov., 1913) and Dercum and Ellis (Jour. of Mental and Nerv. Dis., Feb., 1913). The excessive activity of the thyroid having for its purpose, however, the destruction of poisons, its activity is such as to break them down, i.e. to catabolize them, this process being in keeping with its familiar action as an anti-fat. Herein lies, it seems to me, the main fundamental feature of the mordid process of dementia praecox.

Briefly, the patient is the victim of his defensive resources: he undergoes psychical deterioration as a result of the active denutrition of his cortical cells (among others) through inordinate catabolism of the cellular fats of all neurons, lecithins and other phosphatids, cholesterol, etc., owing mainly excessive catabolic activity of his thyroid gland. This occurs especially during adolescence because his thymus, owing to the coincidence of puberty, is rapidly reducing the supply of nucleoproteins required by his cerebrospinal and peripheral nervous systems to build up these fatty bodies. We shall now see that this elucidates the physical symptoms of the disease, the mental symptoms being obviously due to progressive destruction of the cellular elements.

The vascular symptoms, 'cyanosis, oedema, dermographia, hyperidrosis' with the "pulse slow or rapid often weak and irregular", 'subnormal temperature and syncope,' obviously denote the opposite of active metabolism.

They point clearly to relaxation of the peripheral vessels known to attend excessive thyroid activity. The blood-pressure is generally well below normal, as shown by Lugiato and Channessian (Rev. sperm. di Freniatria, vol. XXXII, fasc., 1-2, 1906) and others, but variable in the same individual.

The same irregular hypotony attends the cardiac muscle; hence, the frequent changes in the pulse-rate and vigor, either from day to day or within, in fact, a few hours.

The circulatory torpor is sometimes rendered evident by reddening of the extremities, hands, feet, nose and ears.

Lugiato (Morgagni, Jan. 1907), states:

> *"The patient is apt to present a rather delusive appearance of robustness, but in fact, he is feeble and torpid and even before the well-marked onset of the disease his circulatory system is apt to be poorly developed, his left ventricle small, his pulse feeble and of low tension, and his superficial veins not very distinct."*

It is to this vascular torpor that cyanosis - sometimes leading to gangrene - is due, the dermographia indicating capillary passive hyperaemia due to relaxation of the arterioles. It accounts also for the oedema, sometimes limited to circumscribed areas resembling fat pads or so infiltrating the whole body as rapidly sometimes to cause a "rapid increase in weight", and also the brain to such a degree as to have suggested the term "wet brain."

The eye fundus, examined in 109 cases by H. H. Tyson and L. Pierce Clarke (Jour. Amer. Med. Assoc., 2 May 1908), shows corresponding signs. The primary changes,' write these authors,

> *"were in the veins which become dilated and tortuous and oedema follows, the changes being analogous to those seen in the passive congestion of the face and hands."*

What "anaemia" there exists is fictitious, for the red corpuscles count usually exceeds normal and is really due to the general hydremia.

The 'hyperidrosis' is another symptom of vascular relaxation in these patients, the sweat-glands, owing to the torpor of their vascular supply, losing their tone and allowing the sweat to ooze out as it often does when death's near.

A striking symptom, particularly noticeable in cases due to fecal stasis, is that the sweat itself gives off an odor - so repulsive in 3 of my cases as to make close proximity to them quite unpleasant.

Others have compared it to the odor of small-pox cases.

The "increased salivary secretion' is also due to relaxation of the glandular vascular supply.

"Syncope", the last of the vascular series, becomes a normal result of such a state of things. The low blood-pressure, the feeble heart action, the circular torpor —all of which tend to favour accumulation of the systemic blood into the splanchnic area—readily explain the cerebral ischaemia to which syncope is usually ascribed.

As regards the muscular system, proper, there is one perplexing symptom which nothing so far has explained. It is the automatism or wax-like position retained by the extremities, etc., when they are placed in that position.

Precisely as would a jointed manikin, it is retained, no matter how uncomfortable or grotesque, until the limb or head is replaced.

If, however, we realize that the functions of the central neurons controlling these movements are also inhibited through the paucity of fatty bodies in them, this 'stereotypy of movement' as it is called, and which also involves the speech muscles, its cause becomes self-evident.

The mutism is probably due to the same condition. The cellular denutrition also accounts for the 'general emaciation' witnessed, and for the sexual anomalies.

Indeed, as Plummer (Trans. Assoc. Amer. Phys., 25 July 1918), of the Mayo Clinic, states, 'the thyroid hormone is fundamentally a part of the catabolic process of higher animal life.'

But how explain the epileptic attacks so common in these cases?

As Pierce Clark (Med. News, 18 July 1903) states, after a study of 150,000 seizures in ordinary epilepsy,

"We must see the principle of pathogenesis in an initial toxin or auto-intoxication."

Not only does this correspond with the cause of dementia praecox in point, but two of my own cases of epilepsy in children, one virtually an instance of status epilepticus, having from 20 to 30 fits a night, and the other 3 to 5 a night, treated on lines calculated to arrest toxaemia of intestinal origin, recovered perfectly, one being now of 17 years standing, the other of over 4 years.

In this disease, as well as dementia praecox, the fit is the reflex expression in most cases, of a protective wave to overcome a tide of toxics which inadequate endocrinic resources cannot destroy as fast as formed.

Hence the improvement noted after such a paroxysm; hence also its recurrence as soon as another toxic wave has attained a certain level.

The early "hysterical seizures; localized spasms and tetany", the "singultus", the 'exaggerated reflexes' and "increased mechanical irritability' are but variants of the toxic process during the anabolic, i.e. pre-catabolic stage, dependent upon the cerebrospinal centers irritated, the form of nervous instability peculiar to the patient and the efficiency of his defensive resources.

It is perhaps unnecessary to state that not all the symptoms enumerated are observed in a given case; as Petersen says, they are not pathognomonic.

When "apoplectiform seizures" appear there's reason to think that a focal cellular autolysis has occurred, while in "athetoid ataxia" and "aphasia" the "transitory paralyses" may all be results of the excessive catabolism entailing breaking down of the cellular fats of central neurons, as shown by chromatolysis of their cell-bodies.

These explain not only the presence of these symptoms but also their prompt disappearance when the cellular autolysis ceases under appropriate treatment.

It is in the light of all these facts that we recall my previous statement that all nerve cells, including the cortical neurons (see Chapter X, The Internal Secretions, 1922), are themselves vascular channels, and the seat of catabolism therefore, as are other cells - but in nerve cells breaking down their functional fats - we have a foundation for the fact, put in the words of Joseph

Collins (Old Dominion Med. and Surg. Jour., Sept., 1908) that sufferers with the disease, "lose their capacity for enthusiasm, are incapable of experiencing extremes of pleasure or pain, manifest a marked listlessness face to face with experiences of life that ordinarily provoke emotional display"; and finally "that aboulia, or loss of will power, is perhaps the most conspicuous hall-mark of dementia praecox."

The pathological findings of the cortical cell in dementia praecox are in keeping with the destructive process of excessive catabolism of cellular fats.

As observed by various histologists, the chromatic substance of the cell bodies rich in fats, yields first; then the achromatic substance; the in tracellular network

which from my viewpoint contains the blood-plasma with its glandular hormones, while the nucleus and nucleolus which contain the dynamic bodies of the cell, its phosphorus-laden nucleins, gradually undergo atrophy and fragmentation.

An important point in this connection is the source of these nucleins, the feeders, at least in part, during the development of the child, of his nervous system, including the cortical cells now in question.

We have seen that from my viewpoint, they are in part derived during the growth of the child from the thymus, and that this gland begins to atrophy rapidly at the very time when dementia praecox usually occurs, i.e. during adolescence.

Thus, as we have seen, while excessive catabolism uses up what nucleins the cortical cells, among others, contain, the supply of nucleins slowly declines.

Indirect testimony to this effect is afforded by the fact that the therapeutic use of nucleinates has given good results, according to Donath and Lundvall, Bayard Holmes, and others; thymus gland extract has been given by Ludlum and Corson White (American Journal of Insanity, Vol. LXXI, No.4, April 1915) in 6 cases: "3 gave excellent results,' they state, and are totally well at the present time."

Finally, another fact which has remained unaccounted for so far, and which the newer conception, submitted herein, explains, is the effect of partial thyroidectomy resorted to by H. J. Berkley, and Kanavel and Pollock; owing to some resemblance of the catatonic phase of the disease to exophthalmic goiter.

R. Lewis (Jour. Amer. Mcd. Assoc., October 1, 1910), who summarizes this work, states that it was followed by "a favourable and sometimes curative effect" in early cases, but with no beneficial result in advanced cases.

It is obvious that this operation by partially removing the thyroid reduced the destructive catabolism it induced. In early cases, when the cortical cells were not materially damaged, recovery could still take place, while in the advanced cases the disintegrated cortical cells were beyond any possible recovery.

While this procedure is not warranted, now that some form of toxaemia within our reach is the initial cause, the fact remains that it emphasizes anew the importance of early curative measures as soon as a case of dementia praecox is identified.

And this we have seen does not belong to the domain of the psychiatrist.

It belongs, if any result is to be attained in stemming the terrible and ever increasing sacrifice of young minds, to the general practitioner, who first sees the exposed child.

Yet in order to permit of this, it is necessary to take into account the statement of Joseph Collins that:

> *"Dementia Praecox (schizophrenia) is a disease which the physician frequently encounters and often fails to recognize."*

This is in a great measure due to the complexity of psychiatric terminology, and it must be said also to the metaphysical trend of their interpretations, a field which the general practitioner usually fails to enter.

Reduced to its simplest expression, the early symptomatology of the average case of dementia praecox before the stage of insanity sets in is not difficult to recognize, though subject to many variations from the picture here given.

The patient, about the age of puberty, who may, perhaps, have done well at school, fails to sustain his general averages.

He finds it increasingly difficult to concentrate his attention either upon his books or any work entrusted to him, and tends to drop his tasks unfinished.

He may leave a position with no apparent excuse, disregarding promises and appointments, and on taking another, conducts himself in the same manner - a behaviour differing totally from his former habits. He becomes listless, moody, constrained, taciturn and seclusive, showing an increasing tendency to ignore the external world. He also becomes careless in dress and appearance.

His emotions seem also to have deteriorated; he no longer becomes enthusiastic over matters or events which formerly greatly pleased him. He shows no joy or sorrow and all tendency to emotional attachment - whether it include affection, altruism or love - steadily declines, until every finer attribute inspired by the love instinct seems to have disappeared.

His temper may show a marked change, contrasting perhaps with what formerly was deemed a "good disposition."

He tends to become surly; is easily angered and quick to quarrel.

He is very positive in his likes and dislikes, obstinate and unreasonable in his demands and may show, if resisted, violent outbursts of temper, scream, weep and use violent and profane language.

On the whole, he is very resentful of control - a defect which often entails the reformatory - and tends to oppose every thing done for him. About this time an outbreak of some sort may occur; the sufferer, boy or girl, may run away and become exposed to the limitless dangers that the external world offers.

The excitement phenomena probably coincide with early irritation, direct or indirect, of the cortical cells by the pathogenic toxic, since they also occur in a measure, under the influence of alcohol and other stimulants or autolusis.

Often from the very start the patient may complain of general malaise, a tendency to insomnia and headache.

Then appears what may be a second stage, probably coinciding with the effects of continued thyroid overactivity and catabolism of the cellular fats; catabolic dilatation of the systemic vessels and denutrition of the cortical cells, viz., that of psychic deterioration.

The patient, while tiring easily and disinclined to do physical work, becomes increasingly apathetic, suspicious, particularly of the persons around him.

His conversation, though showing but little impairment of memory, lacks intelligence, the sentences being at times disjointed illogical.

The power of reasoning seems in abeyance and he is no longer able to grasp even simple propositions.

Hallucinations, illusions and delusions, sometimes of persecution, may then appear. Or, he may be loguacious, talking incessantly, often incoherently, and

become noisy and destructive, or lapse perhaps into mutism, refusing to answer all questions.

Then follows the steady enfeeblement of all faculties, with all its distressing phenomena, many of which render the patient an object of repulsion to all who approach him. Steadily the cerebral cells have been destroyed until all hope of recovery is futile.

What some of these consist in we have already seen. The object is to seek and remove any source of toxaemia which may awaken inordinate activity of the thyroid gland. In some cases, in many perhaps, the source of the poison may be in the intestinal canal, and irrigation with saline solution of the toxic field through an appendicostomy or a cecostomy in the absence of the appendix, may be necessary.

In milder cases, active purgation and a non-toxic diet may suffice.

The stomach, particularly in gastroptosis, may also be the habitat of the pathogenic agent; frequent lavage here is indicated. In one of my cases, vaginal douches to check a foul greenish non-gonococcic leucorrhea, was immediately followed by marked improvement. A cystitis, particularly of the colon bacillus type, is another source of toxin. Briefly, all sources which experience has now pointed out as factors of hyperthyroidism besides the foregoing, such as tonsillar abscesses, adenoids, catarrhal disorders of the nose, nasopharynx and sinuses must be investigated and actively treated if need be.

The results of infectious diseases should be taken into account. It is quite possible that carriers of typhoid, diphtheria, scarlet fever, meningitis, and other pathogenic organisms, might be absorbing toxins from these organisms in sufficient quantities to sustain a toxaemia.

Cultures of the secretions of children who present such histories will soon reveal the presence of such organisms.

Finally, the brain cells, as previously stated, obtain their nucleins during the period of growth, mainly from the thymus. Some cases show the stigmata of thymic defficiency in the bones, teeth, etc., a fact observed by others.

By means of thymus gland, nucleinates, or lecithins, we may not only benefit these special cases, but also those in which the stigmata do not exist, merely because, with the aid of judiciously selected food, these organic agents replace what excessive thyroid catabolism has served to destroy in the cortical cells." - "The Internal Secretions and The Principles of Medicine", Book Review in "Dementia Praecox Studies", Vol. 2-5, 1921.

The Importance of the Ductless Glands

"The adrenals proved to be the organs which, through their secretion, enabled the venous blood to be converted into arterial blood.

Have we not in this the very soul of all functions, normal and pathological?

Indeed, it became evident that the adrenals not only sustained life as fundamental organs of pulmonary respiration, general oxygenation and metabolism, but also that they took a direct part in the processes that protect life.

Cellular oxygenation determining the activity of cellular function, and our defensive enzymes, antibodies, etc., being cellular products, do not fluctuations of the functional activity of the adrenals, which govern oxygenation, correspondingly influence defensive efficiency?

Do we not possess in this action, a fulcrum through which we can, at will, influence disorders of metabolism in which oxygenation is deficient? Its use in the convalescence of influenza and many other disorders clearly illustrates this fact.

Yet oxygenation represents but one phase of metabolism, i.e., of cellular activity, through which our defensive resources are influenced.

The thyroid apparatus was also shown, in the first edition, to take an active part in our defensive functions as a component of the systemic antitoxins or alexins, besides participating in the catabolic phase of general metabolism.

Long has it been known that when all else fails in most chronic processes, the iodides will prove beneficial. Is not every one today familiar with the fact that it is by enhancing the functional activity of the thyroid apparatus, that iodine and the iodides produce their curative effects?

Only now is it beginning fully to be recognized that medical progress as a whole has been handicapped through the non-recognition of **these structures [Ductless Glands], which steadily are asserting their right to be classed with major organs**, the heart, lungs, liver, etc., upon which all our labours have so far reposed.

Their absence has seemed especially obscuring precisely where our role as physicians has demanded the greatest light, e.g., the pathogenesis of disease and therapeutics.

About 200 disorders altogether, an analytical review based, in most instances, upon the author's own experience in over 60 diseases. As these include several of the death- dealing morbid processes with which mankind has to contend, stress need hardly be laid upon their importance." - Dr Charles E. de M. Sajous, MD in "The Internal Secretions and the Principles of Medicine", 1923.

Chapter 11

The Liver and the Emunctory Circulation

"When the liver is so choked up, when its cells, if you please, of each lobe, are so congested as to produce the inability of the Emunctory forces functioning, the Emunctories in the kidneys respond, for, the liver and the kidneys are the positive and negative poles of a human body, and when one becomes overtaxed, necessarily, the other becomes supercharged in its functioning. This then affects, the kidneys in the Emunctory circulation, when the congested liver taxes the Emunctories, then the kidneys attempt to eliminate that excess created."

In order to obtain and maintain, a good and general health, care and treatment should be directed first to the colon and to the liver in equal maner. The liver is the clearing house for the blood, both in and out of the heart and lungs.

The liver is responsible for up to 500 separate functions, the majority in combination with other organs.

Among these functions is the production of: bile, insulin-like growth factor 1 (somatomedin C), albumin, enzyme catalase.

The liver performs several roles in the metabolism of: carbohydrate, protein, lipid.

"The liver is an organ of excretion, as you now see, for the substances called carbon and hydrogen, the chief constituents of bile; and they are highly excrementitious; and the more copious the quantity of bile secreted, the larger the amount of carbon and hydrogen taken from the venous blood. The liver is greatly auxiliary to the lungs and the skin in their work of excretion, and of necessary depuration of the vital fluid, the blood." - John Smedley in "Practical Hydropathy", 1870.

"The Liver: It supplies the bile which is an essential element of digestion. It is also an excremental organ, insomuch as it receives the blood from the portal system which is charged, in part at least, with the products of augmented blood-supply to the pelvic organs and of the enormous developmental work which takes place in that region. The portal blood must be loaded with these excrementitial matters, and greatly increased duty must, consequently, be imposed upon the liver. As an Emunctory, the liver is usually equal to the emergency; but this function must be supplemented by the increased eliminative capacities of the skin, lungs, and kidneys. In health these organs preserve their compensatory activities; but ineffective power in either may lead to accumulations in the blood which will poison the entire organism and produce disastrous results.

The lungs eliminate carbonic acid; the skin dissipates animal heat, and excretes water, urea, and salts; but the kidneys are the chief emunctory glands. Upon them devolves mainly the elimination of the useless and poisonous products of secretion and tissue change. They have no recrementitial (recrement: superfluous or waste matter) function to execute. Through them the waste is finally discharged. I will remind yon also of the physiological relationship and reciprocal dependence of the excretory functions of the lungs, skin, intestinal tract, and kidneys. **Disturbance of this close connection may speedily develop great disorder.** I must assume that you are quite as competent as I am to recognize and treat such diseases. But, following the line of argument previously pursued, I must insist that the most effective method of prevention of the morbid complications of pregnancy consists in the preservation of the normal functional activities of the excretory and emunctory organs.

The constant and necessary physiological relation subsisting between the skin, lungs, alimentary tract, and kidneys demands vigilant supervision. Constipation should be relieved. No faecal mass should be allowed to accumulate in the intestines.

The bowels should be kept in a solvent condition, and an evacuation should be secured every day, either by regulating the diet and habits of the patient, or by such mild, but sufficiently effective therapeutic agents as a skilled discretion may suggest. It often happens that patients deceive themselves by inattention, and their medical attendant either by evasive or exaggerated statements concerning the state of their bowels. As a rule, one can verify or not, as the case may be, such statements by an examination of the tongue and conjunctive, by mal-odour of the breath and person, and by inquiries in regard to the condition of the stomach, appetite, and digestion, the nature and quantity of food, when and how often taken, and whether the ingestion of food and drinks are accompanied or associated with any sense of fullness, discomfort, flatulence, or acidity.

Not only will a careful investigation detect the existence of habitual constipation when a positive assurance to the contrary has been given, but it may disclose the cause, and indicate at once the method of treatment. The inspection of exposed cutaneous surfaces will be greatly aided by palpation.

Cleanliness of the skin, and the free functional activity of the sebaccons and sudoriparous glands must be secured by necessary tepid or hot ablutions or bathing. **Cold bathing is not always safe.** The diet must be regulated and adapted to existing circumstances; disturbances of the alimentary tract must be obviated; the excretory and eliminative functions must be protected; sufficient sleep must be secured; all sources and causes of anxiety, irritation, and excitement must be removed; sunlight and fresh air must be supplied; and last, though not the least important, exercise in the open air must be insisted upon. To these hygienic measures, such therapeutic treatment should be added as intelligent experience and observation have proven to be useful." - Dr Samuel C. Buset, MD in "The Hygiene of Pregnancy", The American Journal of Obstetrics and Diseases of Women and Children, Vol. XIX, January 1886.

"Your liver that the Vietnamese called the seat of the soul, a long time ago and they were right, because it's the seat of chronic disease." - Ivor Cummins BE(Chem), in "Wanna know how to collapse your heart disease risk? ", 19 July 2016.

The State of the Liver in relation to the Health of the Body

"The torpor of an organ, especially an organ of such magnitude as the liver, must, by its sympathies or associations, occasion considerable derangement in the balance of excitement throughout the system; in other words, while the

torpor is diffused from the liver to the alimentary canal, partly from sympathy, and partly from the deficiency of bile, a morbid excess of irritability

accumulates in the nervous system, which inequilibrium of excitement explains, in a great measure, those mental symptoms accompanying a disordered state of the biliary and digestive organs.

It must be recollected here, and well it deserves to be borne in mind, that: **all those effects on other organs and parts of the system resulting from association with the liver, become, in their turn, causes or re-agents, reflecting back upon their source an aggravation of those ills, which were originally disseminated thence.**

This is so clearly evinced in the action and reaction between the biliary and nervous systems, that, in many instances, it is difficult to say in which system the malady commenced. Indeed, any great degree of grief, anxiety, or other depressing passions of the mind, will as certainly derange the functions

of the liver and digestive organs, as the derangements of those organs will produce despondency, irritability, fickleness of temper, and other disturbances of the nervous system.

This principle, or inequilibrium, in the balance of excitement in the system from the torpor of one organ or set of organs, is applicable to an explanation of several diseases under the head of Nervous Diseases.

In Sydenham's chorea (rapid, uncoordinated jerking movements of face, hands and feet), for instance, there is as invariably a torpor of the uterine system, or biliary and digestive organs, as there is an inordinate excitement in a particular class of muscles and nerves, where nature appears to exhaust or expend the morbid accumulation, by what appear ridiculous and extravagant motions.

This seems the natural cure of the disease, and of course requires length of time for its completion; but the most effectual artificial cures are conducted exactly on the principle in question, viz. by a course of such medicines as are best calculated to re-establish the balance of the circulation and excitement, and restore the energy and action of the uterine, biliary and digestive organs.

On this principle also, may be explained many cases of Epilepsy, Hysteria, etc. where the balance of excitement is occasionally, or periodically disturbed, and a morbid excess of it thrown on the brain and nervous system.

There is great reason to believe that hydrocephalus, in a majority of cases, depends on a preceding torpid state of the liver and bowels, occasioning a morbid irritability in the vessels and coverings of the brain.

Independently of the known sympathy between the brain and liver, any obstruction to the free circulation of the blood through the latter organ will cause plethora and congestion in the former, and thus lead to effusion in an organ so soft and delicate as the brain of a child.

The best mode of cure in hydrocephalus (accumulation of cerebrospinal fluid within the brain) illustrates this reasoning: if the premonitory symptoms of hydrocephalus be noticed, and the torpid abdominal viscera be roused into action by proper means, the actual inflammation and effusion in the head will generally be prevented. And who can doubt that many cases of Apoplery (bleeding within internal organs) and of Hemiplegia (paralysis of one side of the body), or that many affections of the Chest, arise from the same source, who has any knowledge either of the doctrine of sympathy, or of the consequences of irregular distributions of nervous and vascular energy?

I would particularly specify Asthma and Water in the Chest, and that peculiar state of lungs which is so appropriately denominated Weakness of Chest.

I trust that a rational explanation has been given of those symptoms depending on, or connected with, derangement of function in the biliary and digestive organs, with out any hypothetical speculations; and if this be granted, we have probably gone some way in elucidating the wide range, not merely of what are termed Bilious, but of Nervous, Hypochondriacal, and Hysterical complaints.

At all events, whether we consider these last as causes or consequences of the functional derangements in question, we shall find that our best remedial measures hinge on this view of the subject; and that, considering the hitherto intractable nature of these disorders, the success attendant upon a plan of treatment founded upon it, will be as superior to any other practice, as the explanation here attempted is more simple than the loose and indefinite ideas so long prevalent in regard to this class of human infirmities.

Before entering on the causes and treatment of biliary derangements, I shall add a few words on a subject which has not attracted sufficient notice.

Not only are glandular enlargements and many local sores (1), but also a very great proportion of cutaneous eruptions and blotches, to be traced to disordered states of the chylopoietic viscera, the most effective measures then, which we can use for the cure of these disorders, are such as tend with the greatest certainty to augment and meliorate the biliary and other secretions.

(1) These affections have commonly been considered as the offspring of an impure state of the blood; and when we see persons, particularly young ones, in whom every scratch festers into a sore, as in scrofula or scurvy, and to whom every accident is the occasion of after-suffering, as is evidenced by the general history given of almost every tumour, as well as of every Spine, Hip, and Knee disease, when we observe that the atmosphere alone will change the disposition of

every action, that poisons introduced and acting upon the circulating medium, will induce the most powerful effects upon the whole system, it is impossible not to be humoralists in a considerable degree, we cannot exclude the influence of a depraved state of the blood; but as it is invariably connected with, if not produced by, disorder of the digestive organs, the effects which partly arise from both causes are often exclusively attributed to one. There is indeed no case of disorder in which the stomach, and other parts of the digestive system are not affected, and the profession and the world are under the greatest obligations to Mr. Abernethy and others, for disclosing to them, in the most convincing and impressive manner, the truth, which so long lay unheeded; **that health and strength spring from a right performance of the chylopoietic functions, and weakness and disease from their disorder and derangement.**

Mental Agitation

The more closely we watch the play of the passions, or in other words, the effects of mind and feeling on the material fabric, the more shall we be convinced of their powerful influence on the functions of the liver and digestive organs in particular. The receipt of a single letter, or message, announcing a melancholy event, in which our interests are concerned, will so completely change the nature and appearance of the biliary fluid, together with the gastric and intestinal secretions, that they can scarcely be recognized as such.

Everything, in short, which disturbs the tranquillity of the mind, interrupts the healthy functions of the liver and digestive organs; which, in their turn, react on, and aggravate the original causes.

These causes alone, were there no others, would be sufficient to account for the wide spread of functional derangements of the biliary organ.

Constipation

So, in the disease now under consideration, constipation of the bowels is a very general symptom or effect; and yet, what essential relief does the simple removal of this symptom afford in general, however, we may divide the treatment into two heads—withdrawing the causes, and obviating their effects.

Removal of Causes

Many of the causes, which induce functional and incipient structural derangement of the biliary organ, cannot be avoided; and therefore we can endeavour only to counteract their effects.

The close sympathy which exists between the feet and the stomach, and between the stomach and the liver, will point out the necessity of paying the utmost attention to the warmth and dryness of the feet, a circumstance of more importance, as a remedial measure in these disorders, than is generally imagined.

I shall begin, therefore, with the essential, and gradually descend through the various auxiliary means of relief, which experience and observation have stamped with the seal of utility, in this interesting class of human affections.

It has already been stated, that in 99 cases out of 100, there is a deficiency or irregularity, together with vitiation of the biliary secretion.

As for a mere redundant secretion of bile, the thing itself is a trifle, and the treatment simple and easy. It is the torpid liver which every hour arrests our attention, and requires our exertions to obviate its long catalogue of effects.

The 3 primary indications to be followed are these:

1st - To increase and meliorate the biliary fluid.

2nd - To procure the daily removal of the vitiated secretions of the liver and other digestive organs.

3rd - To increase the tone and digestive power of the alimentary canal." -

Dr Charles Turner Cooke, Surgeon, in "Affections of the Liver, Internal Organs, and Nervous System", 1828.

The Tongue in the Diagnosis of Gastric Diseases

"Dr Douglas Vander Hoof, MD says there is but one condition of the tongue from which any conclusion can be reached as to the state of the gastric secretions, viz., the bald, red, and often glazed tongue seen in many cases of gastric anacidity - often erroneously ascribed to gastric states associated with excessive hydrochloric acid secretion. In a series of 1,500 cases, the author found the tongue coated in 65%, of cases of normal gastric acidity, subacidity, or anacidity, and in 72% of cases of hyperacidity.

In the diagnosis of gastric diseases, practically no significance can be attached to the appearance of the tongue. Common causes of coated tongue are nasal obstruction (including that of febrile conditions), absence of friction (due to liquid diet, hurried eating, or a high, arched palate), and perversion of the salivary secretion.

The treatment of coated tongue consists in removal of the cause, what ever that may be, and removal of the accumulated epithelium and fungous growths constituting the "fur" by means of a small silver hoe, a procedure first recommended by Oliver Wendell Holmes." - in "New York Medical Journal", 17 June 1916.

The Chylopoietic Functions

Chylopoietic Functions: the production of chyle. The viscera more directly employed in the Chylopoietic Function are the stomach, and the small and large intestines.

Chyle: is a milky bodily fluid consisting of lymph and emulsified fats, or free fatty acids. It is formed in the small intestine during digestion of fatty foods, and taken up by lymph vessels specifically known as lacteals.

"The atonic gout rarely manifests itself in its incipient stage, like the regular disease, by disorder of the circulation.

It first shows itself by affection of the stomach, every form of dyspepsia is present, but particularly gastrodynia and flatulency.

The bowels are confined, and this state of constipation, if neglected, is relieved by occasional disturbance and diarrhoea.

The urine is sometimes loaded with urates which appear, and disappear with the greater or less pressure of the complaint.

There is no doubt, that a general state of vascular plethora of the great chylopoietic organs is always met with in gout.

It is plain that the heart is oppressed with a flood of returning venous blood, associated also with the impure condition of this fluid (the blood), from the non-elimination of urea and urates, and probably of the biliary constituents, is the cause of those symptoms of disordered function of this organ, which I have pointed out as the earliest indication of the disease.

Venous congestion then, I consider the first condition essential to the formation of the gouty diathesis.

But the great venous canals of the body, as well as the larger arterial vessels, are endowed with a resiliency which enables them to struggle well against the flood of returning blood.

This fluid, then, is compressed between two opposing forces; that, namely, which is derived from the heart and arterial system, urging it forward on its course; and, on the other hand, the antagonistic resistance of the great veins leading to the right auricle.

Under this compression I believe that the vessels give way, and a true hemorrhage is occasioned in the part affected. If the rupture take place in a minute capillary carrying the serous portion of the blood only, oedema is the consequence; but if the burst vessel be one carrying red blood, a true ecchymosis is formed.

This view of a fit of gout, may startle from its novelty; but **I am thoroughly convinced, from long observation of the disease, that I have given the true rationale.**" - Dr William Gairdner, MD, in "On Gout; its History, its Causes, and its Cure", 1854.

Excretory Function of the Liver

"The elaboration of bile, the formation and excretion of bile acids, and the excretion of bile pigment constitute the most prominent excretory functions of the liver. Bile exerts an important influence on the digestion and absorption of lipids from the gastrointestinal tract, primarily because of the bile acids. Hepatic uptake, metabolism and biliary excretion normally account for the disposal of bilirubin, the major end product of haemoglobin catabolism. Interference with any of these processes may result in jaundice. These are the major excretory functions of the liver.

Mechanisms of Bile Formation

The formation of bile by the liver is contingent on perfusion of the liver cells by blood. With termination of hepatic blood flow, bile excretion promptly ceases.

Bile continues to be formed, however, even with very low perfusion pressures.

Bile flow increased rapidly with further increments in perfusion pressure primarily because of increased blood flow through the liver.

The delivery of an adequate amount of oxygen to the bile-forming cells is one of the major contributions of hepatic blood flow." - Dr Burton Combes, MD in "The Liver: Morphology, Biochemistry, Physiology", Vol.2, 1964.

The Liver: Defined

1. The liver is the largest gland in the body and weighs about 1.5kg or 2kg.

It is centrally located in the body and its functions are exceedingly important, being essential to the maintenance of life itself.

2. The Principal Functions of the Liver:

a) The formation of an internal secretion, called "glycogen."
b) The formation of urea.
c) The production of bile.

3. The Antitoxic Function of the Liver:

a) It acts as a storage for metallic poisons, such as mercury, arsenic, iodine and antimony, for long periods, keeping them out of the blood as long as possible and so protecting life against their destructive ravages.

b) It exerts a protective action against poisoning, by Indol and Phenol.

c) The liver reduces the toxic activity generated by certain specific bacteria, such as the typhoid, and those either identical with it or closely affiliated.

I. Glycogen secreted by the liver.

Glycogen is always present in small proportions in protoplasm, animal membranes, white blood corpuscles and pus.

It is a white, tasteless powder, readily dissolved in water, producing what is termed an opaque solution. It is readily transformed into glucose (the sugar of fruits) and is thus in waiting for easy transformation into vital sustenance, through oxidation. This glycogen in the liver is merely the storage of the excess, which cannot be taken up during and following the processes of digestion, and is carried by the circulation and stored for future use.

It is derived principally from the carbohydrates. It is a sugar forming, animal starch, and its utilization is a source of much bodily energy. It must be absorbed into the blood ere the body can be nourished, energy generated and life sustained.

II. Urea is formed in the liver largely from ammonium carbonate and in quantity amounts to about one-half of the urea secreted in the body. It is derived origin ally from an excess of nitrogen in the tissues and which must be arrested and excreted to prevent the destruction of the body.

Secretion of the Gastric Juice by the Stomach

a) "Gastric juice is a clear, colorless, limpid fluid, very acid and peptic, in nature." Its daily secretion aggregates about one-tenth the weight of the body.

It is composed of water, solid residue, pepsin, chloride of sodium, chloride of potassium, chloride of calcium, phosphate of calcium, free hydrochloric acid, phosphate of magnesium and phosphate of iron.

The principal, and hence the most essential function of the gastric juices, as a most powerful contributory agent in digestion, is to dissolve the proteids resident in foods and transform them into peptones.

Digestion is a chemical process, effecting certain radical, definite and essential changes in the food consumed, in order to transform it into life-sustaining and tissue-building substances, by converting it into blood to be carried by the circulation to all parts of the body.

b) The gastric secretion is also a most powerful and effective germicide and disinfectant, destroying many of the harmful bacteria taken into the body, along with food and drink. In this necessary work both stomach and liver are engaged, hence the foregoing is here stated.

The Production of Bile

III. Bile is a thick, golden coloured and very bitter liquid, secreted by the liver and stored in the gall bladder. It is composed of both organic and inorganic substances. It is primarily excrementitious in character; while filling the essential functions of such it possesses properties to aid in intestinal digestion and it is also powerfully disinfective and germicidal. The properties of the bile can be readily ascertained by consulting any good text-book on physiology.

Diseases of the Liver

We mention only the most prominent and common ones.

Torpidity, inactivity of the liver: a dullness, wherein it fails to perform its functions, causing a feeling of general languor and of weakness and of inability to meet responsibilities. Doubtless, torpidity of the liver is frequently mistaken for the presence of malarial troubles. Its causes are not far to seek.

Congestion of the liver
This manifests itself in 2 forms: Active and Passive.

a) Active Congestion: There is a sense of distress or fullness in the region of the abdomen on each side of the stomach. This is peculiarly the case with dyspeptics and heavy drinkers, and is largely due to an overfulness of the portal vessels.
b) Passive Congestion: This is quite common and is caused by an increase of pressure in the efferent vessels. It causes enlargement of the liver. Atrophy is liable to follow chronic congestion. All congestion of the liver is an affection of the blood vessels. The symptoms are not very definite. Gastro-intestinal catarrh is usually present and there may be vomiting of blood. It may develop into general dropsy.

Cirrhosis of the liver
A hardening due to an increase in the connective tissue.

This manifests itself in the form of:

a) Toxic cirrhosis: Alcohol being the chief cause. Other poisons may also be responsible.
b) Infectious cirrhosis: Associated with or a resultant of certain fevers, such as malarial.
c) Chronic Cirrhosis: As a result of a congestion of blood vessels in heart disease.
d) Obstruction of the bile ducts.

4. Gall stones, causing obstruction in the bile ducts or in the intestines.

General Treatment of Liver

Affections

1. Begin by cleansing the entire colon, using for that purpose the colon syringe, to remove all germs and poisons and poison-breeding substances.
A cure can not be effected while those things remain in the body. They are the occasion of more bodily harm than all other causes, originating in neglect,

combined. They are very injurious to the entire body, and especially so to the liver. While they remain, they continually increase the vicious conditions and aggravate the various troubles of the liver.

2. Give it thorough Osteopathic Treatment. This will arouse that organ to greater activity and aid in enabling it to free itself of its encumbrances.

3. Follow a Healthy Diet. You may include: grape juice and lemonade freely (allow 1 hour and 30 minutes before taking other foods), and an abundance of water.

Cherries are nutritious, are easily digested, and contain alkaline salts, potash and lime, also iron and phosphoric acid, and are excellent for the liver.

Take a cabinet bath 5 times each week to open the pores and to aid in eliminating the poisons from the body, and so relieve the liver of all unnecessary work.

Keeping the colon well cleansed will be of great service in keeping the liver as well as the stomach in a healthful condition.

Neglect in this matter is sure to induce most serious and often times complicated troubles.

Prevention is always to be commended, not only by way of prevention, but of conservation as well.

The stomach also needs to be kept in a vigorous condition, by the use of a right dietary and prudence in eating.

Error in these things invites a long category of ills, from which it is difficult to be delivered." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, Md., in "The New and Scientific Treatment of Chronic Diseases", 1914.

Toxicolytic Powers of the Liver

"The liver is a most important agent in the limitation of intestinal putrefaction, for by its uropoeitic functions it combines the NH2 group of amino-acids and ammonia into urea, while by its uricopoeitic function it transforms nucleins and purine bases into uric acid.

In it aromatic acids combine with sulphuric and glycuronic acids, while the hepatic cells not only become saturated with toxins but exert a decided toxicolytic function. The intestinal mucous membrane modifies albumoses and toxins, but permits alkaloids and ammonia compounds to filter through without change, leaving the liver cells to destroy substances soluble in alcohol (mainly alkaloids) and ammonia compounds. Breisacher's experiments on thyroidectomized dogs revealed the fact that death took place less rapidly on milk or boiled meat than on beef tea and roast meats; and Ewald and Combe have shown the favourable effects of withdrawing meats from those afflicted with myxoedema, simple goitre, and exophthalmic goitre." - Dr Alexander Bryce, MD in "Intestinal Toxaemia or, Auto-Intoxication in the Causation of Disease", 1920.

The Liver - The Next Line of Defence

"The next great barrier or fortification against poisons from the bowel entering the general circulation is the liver. This organ is a marvellous laboratory manned by millions of little cells that could teach our most learned chemists many secrets about their profession.

Every drop of deleterious matter that leaks into the blood from the bowel is at once destroyed. Indol, for example, a dangerous poison made by putrefactive bacteria in the intestine, is detoxicated in the liver by being mixed, or as we say "conjugated" with etherial sulphates.

This transforms the deadly indol into indican, which is entirely harmless.

The toxins from the lower intestine, after being destroyed or made harmless by the little hepatic chemists, are filtered from the blood by the kidneys and expelled in the urine. In many cases when faecal analysis shows much putrefaction and heavy indol in the colon, the urine, upon examination is found free from indican.

This means that little or no damage has yet been sustained by the lining of the bowel and that this line of defence is still intact, and in consequence there is no leakage of toxins into the blood.

Toxins cause no distress so long as Liver works well

Unfortunately just so long as the liver continues to neutralize toxins received from the bowel, no inconvenience is felt by the victim, and he has not the slightest suspicion of the irreparable damage that continually is going on. But gradually, one by one, the faithful little chemist-cells of the liver are poisoned, killed and carried off by the blood before they can leave successors to carry on their work. At 21 it is estimated a man has 30 million reserve hepatic cells.

At 40 he may not have half that number and finally the staff of little germs-destroying chemists is so reduced in numbers that poisons pass through the liver into the general circulation without being changed and made harmless, and so it comes to pass that the kidneys are gradually destroyed by contact with the deleterious products generated by putrefactive germs in the colon.

Eventually the polluted blood-stream deteriorates every organ, gland and tissue, thus bringing about those senile changes that are falsely attributed to old age. Degeneration and death are the result of toxins.

Though we cannot avoid the poisons generated by the cells of which our flesh is composed; yet on the other hand, the invasion and domination of the bowels by toxic bacteria, which gradually destroy the body, and cause nearly all human maladies, is unnatural and unnecessary, and can be prevented quite easily if we give Nature a chance.

When this is done, and when we learn to make our eating and other habits, conform to the laws of health, life and youth on this planet will be extended for a much longer period than now obtains, probably for 150 years or more." - Dr James Empringham, in "Intestinal Gardening for the Prolongation of Youth", 1938.

The Importance of Maintaining a Healthy Liver: To Prevent Organic Disease

"There are few chronic diseases, fevers, digestive disorders colic, flatuosity, jaundice, vomiting and diarrhoea, melena (dark black, tarry faeces), oedematia, and dropsy, that there is no engorgement in the viscera of the lower abdomen in general, and in the liver in particular. Let us read in evidence the great repertoires of the anatomical autopsy, and we shall be convinced, if we doubt it, of the great frequency of these kinds of engorgement or obstruction. In how many useful details could we not enter if we dealt with all kinds of obstructions of various parts of the body; but it would be an immense work, and we must and want to confine ourselves in it to considering the most common obstructions of the liver, though very often little known, as regards their existence, their species, their various endings." - Dr Antoine Portal, MD in "Observations sur la nature et le traitement des maladies du foie", 1813, p. 45.

"The embarrassment of the digestive organs, and especially the liver, seems to be the cause of all moral affections.

We know that Ancient and modern writers insist on the use of active purgatives in mania and melancholy; and though the drastics that are appropriate for these conditions are not suitable for hypochondria, milder appetizers are no less necessary, and I see no one that is at once as sweet and as appropriate to the occasion as the saline ones, which, by correcting the action disorder of the liver, exert a profound influence on the most slight nuances of moral diseases.

And do not we find in the disorder of the digestive system the most ordinary cause from insomnia, worried sleep, nightmare, and a cure effective in purgatives?

Several painful affections, which Professor Chaussier as classified as neuralgia, are often likely to be reported to this source, and to be successfully fought by the purgatives. Hoffmann recommends them in sciatica, and Mr. Abernethy extols their efficacy against Tic Douloureux" (Trigeminal Neuralgia).

The most distinguished practitioners generally agree on the origin of the strumous diseases, and attribute them in a more special in the pathological state of the digestive viscera.

Gramberg says:

"Many individuals afflicted with pulmonary phthisis (pulmonary tuberculosis) complain of the stomach, because the disease often derives from the lower abdomen".

No fact is better known in pathology than the frequency of the dropsy of the splanchnic cavities, or of the cellular tissue, resulting from the morbid state of the digestive organs. It's usually a fatal termination of several chronic and acute diseases.

Speaking of hemoptysis (coughing up of blood or blood-stained mucus from the bronchi, larynx, trachea, or lungs, this can occur with lung cancer, infections such as tuberculosis, bronchitis, or pneumonia, and certain cardiovascular conditions).

Gramberg makes this observation:

> *"I do not hesitate to assert that, in my own person and in many others, I have never been able to combat a terrible haemoptysis by releasing the circulation of moods by purging the alimentary canal."*

Hallé, in his memoires, observes that the treatment of milky diseases is entirely based on the method of Intestinal Evacuations, sustained with more or less continuity. Indeed, there exists at this time a marked disposition to the disorder of the digestive functions, and a frequent need to administer the purgatives, to ensure even the proper regularity of the belly.

It is to the omission of these agents that the slow recovery of women in childbirth and several diseases which occur later, which the women themselves often report to a previous childbirth, can be very constantly attributed.

To such a disorder we must attribute several serious puerperal diseases, viz., Uterine haemorrhage; the collapse undergoes vital powers, so suddenly fatal, and convulsions, which are often the fatal termination; finally, the disease which simulates peritonitis.

In all these affections, also related to the disorder of the hepatic function, other diseases could be added in the same genus, independently of those of an inflammatory nature, to confirm the general assertion of M. Hallé." - Francis Hopkins in "Considérations Générales Sur l'Utilité des Purgatifs", 1823.

Toxicity Affecting the Liver

"Dr Frank S. Jameson, MD (Colonic Therapy. Its usefulness for the relief of obstipation and systemic disease and the Indications for Its employment. Am. Med, August 1930), **states that 36 Toxic Substances; Indol, Skatol, Phenol, Botulin, Triptophan, for example, exist in the colon and that the reason that people can endure colon stasis is because of the detoxicating effect of the liver.**

He quotes Widal, Abrami and Iancovesco (N. L'epreuve de l'hemoclasie digestive dans l'étude de l'insuffisance hepatique. Presse med., 11 Dec. 1920) to prove that blood in the portal vein is not detoxicated and when the portal vein in animals is anastomosed into the inferior vena cava so that this blood enters the general circulation hemoelastic shock results every time following feeding.

Jameson, therefore, believes that **the liver is a buffer and that the detoxicating effect of this organ is sufficient to prevent the entrance of deleterious disintegrating products of colonic putrefaction into the general circulation.**

He concludes that Colon Irrigation is of value in mental and nervous states, certain forms of chronic nephritis and deforming diseases of the joints." - Dr Harold K. Marshall, MD, Assistant Physician, Gardner State Colony, Department of Mental Diseases, and Dr Charles E. Thompson, MD, Superintendent, Gardner State Colony, in "New England Journal of Medicine", 8 September 1932.

The Liver Plays a Critical Role

"The normal functioning of brain is intimately as well as intricately interrelated with normal functioning of the liver.

Liver plays a critical role of not only providing vital nutrients to the brain but also of detoxifying the splanchnic blood. Compromised liver function leads to insufficient detoxification thus allowing neurotoxins (such as ammonia, manganese, and other chemicals) to enter the cerebral circulation.

In addition, porto-systemic shunts which are common accompaniments of advanced liver disease facilitate free passage of neurotoxins into the cerebral circulation.

The problem is further compounded by additional variables such as gastrointestinal bleeding, malnutrition, concurrent renal failure, etc, which are often associated with liver cirrhosis.

Neurological damage in chronic liver disease and liver cirrhosis seems to be multifactorial primarily attributable to: brain accumulation of ammonia, manganese, and lactate; altered permeability of the blood-brain barrier; recruitment of monocytes after microglial activation; and neuro-inflammation." - in "Neurologic Manifestations of Chronic Liver Disease and Liver Cirrhosis", Current Problems in Diagnostic Radiology, September–October 2015.

> ***"Acute-on-chronic liver failure (ACLF) is a frequent syndrome in patients with cirrhosis characterized by acute decompensation, organ failure(s), and high short-term mortality. It develops in close association with a systemic inflammation that probably plays a major role in the pathogenesis of the syndrome, correlates closely with the number of organ failures, and is a major predictor of short-term mortality. Acute-on-chronic liver failure frequently occurs in the setting of a precipitating event that promotes systemic inflammation such as bacterial infection, or acute alcoholic hepatitis. The suggestion has been raised that in these cases the syndrome may be related to translocation of bacterial products from the intestinal lumen to the systemic circulation."*** *- in "Acute-on-Chronic Liver Failure: Definition, Diagnosis, and Clinical Characteristics", Seminars in Liver Disease Vol.36, No.2, 2016.*

"Small intestinal bacterial overgrowth (SIBO) and the subsequent mucosal inflammation likely disrupt gut tight junctions, causing a leaky gut which may play a role in the progression of disease.

Bacterial translocation in particular has been implicated as a relevant factor in the progression of Chronic liver disease (CLD).

It is defined as translocation of bacteria and/or bacterial products (such as lipopolysaccharides, peptidoglycans, muramyl-dipeptides, and bacterial DNA (metabolic waste)) from across the gut mucosal barrier to Mesenteric Lymph Nodes (MLN), liver, spleen, kidney, and bloodstream.

The ability to culture luminal bacteria from MLN can be an evidence that bacterial translocation occurs. In patients with advanced liver disease, bacterial translocation and subsequent augmented proinflammatory responses to gut-derived bacterial products, in concert with host susceptibility, determine remote organ injury. This may include acute on-chronic liver failure, hepatorenal syndrome, hepatic encephalopathy, and spontaneous bacterial peritonitis (SBP).

The mechanisms postulated include deficiencies in local host immune defenses, increased permeability of the intestinal mucosal barrier, and dysbiosis of the microbiota in the gut lumen. Small intestinal bacterial overgrowth (SIBO) is one manifestation of gut microbial dysbiosis.

This is a heterogeneous syndrome characterized by an excessive and/or abnormal type of bacteria in the small bowel." - in "Systematic Review and Meta-Analysis: Prevalence of Small Intestinal Bacterial Overgrowth in Chronic Liver Disease", Seminars in Liver Disease Vol.37, No.4, 2017.

Chronic Liver Disease & Renal Dysfunction

"Conclusions: Renal dysfunction was seen in Chronic Liver Disease of any etiology. More is the severity of liver disease, more is the renal dysfunction." *- in "Renal dysfunction in chronic liver disease", Journal of Clinical and Experimental Hepatology, Vol. 8, Supplement 1, S72, 1 July 2018.*

Chapter 12

The Kidneys

*"**The main function of the kidneys is to filter off waste products,** chief among these being urea and uric acid. **The inadequate function of the skin and bowels causes the kidneys to perform an additional, vicarious work in attempting to rid the body of impurities.** Alcohol heads the list of causes of diseased kidneys. The other Emunctories can not get rid of alcoholic poison and the kidneys are compelled to make the attempt." - Dr W. T. Mares, MD in "The Medical Brief", 1905.*

Renal and Urinary Diseases

"Disorders of the great cleansing or Emunctory System are always fraught with danger to health and life. It is sometimes forgotten that; more solid matter in the form of urea, etc., is removed by the kidneys each day than by any other one system.

Sudden exposure to severe alternation of temperature, the excessive use of alcohol, and others disturb and irritate the minute circulatory system of the kidneys, and we have as a result various forms of inflammation and consolidation, interfering with normal action.

As the retention or too slow elimination of urea from the blood is the retention of a poison, it is no wonder that many of the cases of heart disease and brain disease have their start in the imperfect action of the renal system.

In our office tables we distinguish between renal and urinary diseases as far as possible, although the certificates do not always make these plain." - in "Twelfth Annual Report of the The Board of Health of the State of New Jersey", 1888.

Urological and Venereal Diseases

"Renal conditions, both functional and organic, bear a most intimate relation to urethral fever.

Few patients with urethral strictures or urinary obstruction of any form escape from a little complicating functional renal disturbance, which if long continued may become organic. This disturbance may be so slight as to escape notice.

This deficiency is compensated for by the emunctory function of the skin and bowels, but when the excretory quality is diminished by hyperaemia or shock, a resulting reflex action upon the renal tissue may produce suppression of urine and uraemia.

The secretion of the urine is profoundly influenced through the sympathetic nerves. Their action cannot be too completely studied.

All operative manipulations upon the genito-urinary tract are particularly liable, by reflex action, to throw extra work upon the blood vessels supplying the parts, thus depriving the kidneys of their proper nutritive supply, and induce an anuria which may cause speedy death. Urinary toxaemia bears a special relation to the general accidents which may occur in genito-urinary surgery.

Diuresis: The condition of the kidneys is of the utmost importance. Their proper functional activity governs, in a great measure, the success or failure of the genito-urinary operation." - Dr Bukk G. Carleton, MD, in "A Treatise on Urological and Venereal Diseases", 1905.

The Primary Detoxifiers of the Body

The liver & kidneys, which are part of the primary organs of elimination, have the function of being the primary detoxifiers of the body. Systemic toxicity caused by autointoxication is one of the most frequently cited causative factors for persons suffering from muscle and joint pain.

"The kidneys, you know, secrete the urine. According to the various circumstances of the human system does the quality of this secretion vary in its composition. The special office of the kidneys is to eliminate or extract the highly animal substance called nitrogen. This is an elementary ingredient, and a principal substance of their excretion from the body, but not the only one.

They have, indeed, a certain relation in their function to that of the skin, in the watery fluid which forms so large a part of the urine, and this is always in the inverse proportion of the quantity taken from the system by perspiration of the skin.

Many different kinds of salts and other matters are to be found in the urine by chemical analysis; but I need not mention them, here.

The chief matter which characterizes its composition is called urea, which is of a highly animalized mature, and the constant excretion of which cannot before any length of time without the most injurious and even fatal results.

The function of the kidneys appears to be the occasional outlet for whatever is not needed in the animal system, and whatever is not of a suitable quality for a passage by the other organs of excretion, or does not find its usual and proper outlet.

Often does the bile pass in the urine when the usual passage by the bowels is stopped by disease. The special matter of extraction, I repeat, is urea as a proximate principle, and the special elementary substance is nitrogen". - John Smedley in "Practical Hydropathy", 1870.

"Rowntree found that when phenolphthalein was given by the mouth it was not found in the urine, but when given hypodermatically it was excreted by the kidneys." - Dr Walter A. Bastedo, MD, Associate in Pharmacology and Therapeutics, Columbia University, in "JAMA", 29 August 1914.

Causes of Renal Pain

"As a rule, we will find that the stimuli capable of causing pain in an organ are those that resemble the natural accidents which are liable to befall the organ in question.

Thus, sudden overdistension of any one of the hollow viscera is capable of causing colic; likewise stimuli, which cause over-active peristalsis, with or without obstruction, are capable of causing cramps or colic.

There are 2 very different varieties of Pain associated with diseases of the upper urinary tract:

1. There is at one end the typical renal colic with its excruciating, violent and radiating pains;
2. At the other there is the fixed pain which in its turn may be dull and vague or sharp and intense.

Colic in the intestines is encountered under diverse conditions. It may be caused by certain medicines (medical drugs), foods, indigestible bodies or irritating substances.

Constipation with the increased muscular effort necessary to propel the hardened faeces is the commonest cause of intestinal pain.

Foreign bodies, such as gallstones, when they become impacted during their passage through the small intestines, are the cause of intense colic; likewise intestinal colic is caused by narrowings of the bowel of sufficient degree to require violent peristaltic action in order to force the contents past the obstruction.

A sudden acute blocking of the bowel, on the other hand, may be unaccompanied by intermittent pain or colic. Returning now to the kidney and its duct we find that the type of pain typified by renal colic is due to excessive contraction of the smooth muscle in the pelvis and ureter.

Normally the urine does not flow passively through the ureter, but is forced through the tube by peristaltic contractions.

Any stimulus capable of exciting excessive uretro-pelvic contractions seems capable of causing renal colic.

1. Irritating substances, either mechanical or chemical, may stimulate the musculature of the pelvis and ureter to abnormal contraction.
2. Inflammatory processes involving the ureter or pelvis may be the cause of painful spasmodic muscular contractions in these structures.

3. We may have colic as the result of efforts to propel a foreign body along the ureter.

4. The lumen may be obstructed by stricture, by a kink or by pressure from without.

Colicy pains frequently accompany all of the purulent infections of the upper urinary tract and are probably the result of temporary complete obstruction." - Dr E. MacD. Stanton, MD, in "New York State Journal of Medicine", 9 September 1914.

Liver and Kidneys

"The liver and kidneys serve as it where "batteries" of the body.

The liver functions has the positive pole of the battery, the kidneys the negative. Such is, when the liver and kidneys, either or both are deficient in their functioning, the body's "battery"may be said to have been run down. Thus fatigue and low vitality become pretty much the result.

The functionings of the liver being upon an excretory and secretive functioning as a gland, the glands within the organ and glands within the other portions of the system are depending upon the activity of same in its assimilating, in its functioning as eliminating forces in the body.

The spleen performs a function more in accord with that balance between the red blood and white blood cellular."

The Function of the Kidneys

"It is a common sight to see the men who operate a steam engine cleaning out the ashes and cinders from the engine. These ashes and cinders come as a result of burning coal to make the engine move. If they were not cleaned out, it would not be long before the engine would be useless and unable to go.

This illustrates what occurs in our bodies. Every day we take food and drink into the body, just as coal is placed in the fire-box of the steam-engine.

This food burns in our bodies, and eventually leaves a certain amount of ash, or waste, that must be cleaned out of the body.

The body or some of its parts are constantly in motion, and when anything moves this must result in a wearing-out process that gives rise to waste materials.

This worn-out material must be cast out; for if not cleaned out, the waste materials act as poisons to injure the body and causes sickness. It is the work of the kidneys to remove waste matter from the body.

While the blood is flowing through the kidneys, they strain out some of the poisonous waste matters.

The waste matters, together with the water that the kidneys take out of the blood, make up the urine. The urine passes from the kidneys through a tube that

leads from each kidney down to the urinary bladder, and it is voided from the bladder at the time of urination.

An adult will void from one to three pounds of urine in a day. When a person is in good health and drinking as much water as he should, the urine will be a very light yellow colour; oftentimes it will be almost as clear as water.

If the urine voided is of a red or brown colour, it shows that too little water is drunk. In every case of illness in which there is a fever, the work of the kidneys is greatly increased, and it is very important that the sick person drink large quantities of pure water. It is always well to have water conveniently near so that the sick person can drink frequently.

Alcohol, and some other products do serious harm to the kidneys. It is a part of the work of the kidneys to cast out of the body anything in the blood that is harmful, such as the articles mentioned here.

In casting these harmful things out of the blood, the kidneys are themselves injured in somewhat the same way that a policeman, arresting a desperado in order to protect other people, may be injured seriously by the men he is arresting." - A.C. Selmon, MD, in "Health and Longevity", 1940.

The Functional Activity of the Kidneys

"**Under normal conditions the kidneys are quite capable of discharging all the duty which they are called upon to perform, and apart from disease of these organs, there is no such thing as renal inadequacy.**

But when we are dealing with processes of disease, we may find it necessary to increase the excretion of both the water and the solids of the urine.

Provided the kidneys are healthy, we have only got to maintain the vigour of the circulation, and if a sufficient amount of blood is driven through the renal vessels, then the kidneys will eliminate both the water and the waste products.

Under such circumstances, any increased discharge of fluid will tend to augment the absolute excretion of solids.

But when we have got a failing circulation, diseased kidneys, or any obstruction to the elimination of urine, our indications for treatment will be not merely to increase functional activity, but as far as possible to lessen the production of waste nitrogenous products which are chiefly eliminated by the kidneys, and often even to diminish the supply of fluid.

When the tissues are waterlogged, you will neither increase the activity of the kidneys nor in any way lower the reservoir by increasing the amount of fluid ingested.

In health, the amount of urine excreted often varies very considerably from day to day, independently of the quantity of fluid taken in or of the amount lost by other channels. and this is due to the varying capacities of the blood vessels. You all know the diuretic effects, independently of drinking, of hard mental work, and profuse diuresis often follows an hysterical attack or other emotional disturbance, owing to increased vasomotor tone. Cold has a similar effect, and, to a less extent,

constipation; in the former case the peripheral vessels are contracted and the renal dilated, and in the latter there is increased vasomotor tone in the vessels of the bowel supplied by the solar plexus, accompanied by diminished watery excretions per anum.

From a similar cause there is rapid elimination after many febrile diseases.

In the early stages of granular kidney there is often profuse diuresis and a free imbibition of fluid, which latter is rather the consequence of the dehydration of the blood from excessive fluid elimination than the cause.

This is associated with high arterial tension.

The flushing process so largely adopted at many health resorts is mainly based on the idea of washing out waste products, ptomaines, and other poisonous substances.

It is unfortunately too frequently a fact that effete materials retained in the system require to be eliminated.

The fact that so much flushing is so frequently required is evidence that the individual has not been leading a healthy physiological life.

Those who imagine that they can preserve their health and longevity by from living, little exercise, and 6 weeks at a health resort each year will in time discover their mistake.

It is much more rational to so regulate the diet, exercise, and all the bodily functions that no more work will be required of any organ than it can easily perform." - Dr James Barr, MD in "A Discussion On Diuretics", The British Medical Journal, 11 December 1897.

"We must confess that we should rather for a time stimulate the other Emunctories, and so endeavour to carry off effete products by such channels, whilst the diseased structures obtained a certain amount of rest, instead of attempting to goad an enfeebled organ into performing an extra amount of work by pouring large quantities of fluid into the body." *- in "The British Medical Journal", p. 246, 14 March 1868.*

The Relation of Renal Disease to Mental Derangement

"Assistant Physician and Pathologist, Dancers Insane Hospital, Danvers, Mass.

Little attention is paid in most of the text-books on insanity to the connection which may exist between diseases of the kidneys and disorder in the mental functions, and writers on the subject of internal medicine are likewise generally silent as to psychical symptoms occurring in renal disease.

With the increased attention which has been paid of late to the influence of general disturbances of nutrition on the activity of the brain, it is not surprising that attention should have been turned to the condition of the great excretory organs, and articles discussing the condition of the urine or the kidneys in the insane have appeared from time to time in the medical journals.

I purpose, in the present paper, to report briefly some of the results of examinations of the urine and kidneys of patients in the Danvers Insane Hospital during my connection with it.

In considering the significance of renal disease, coincident with mental derangement, the following possibilities must, be taken into account:

The renal disease may be the immediate cause of the mental symptoms, any poison which is capable of causing coma may also produce slighter degrees of mental disturbance. That the so-called uraemic condition may be the cause of active mental derangement is unquestionable.

Probably such cases are more commonly seen in private than in hospital practice, as they are apt to be accompanied by such evident physical signs of renal disease as to make their nature plain, but they are occasionally found in hospitals for the insane.

The mental symptoms, in the cases I have recognized, have consisted, as might perhaps be anticipated, in mental confusion, with a depressed emotional tone, and at times, a tendency to violence in the effort to escape from misunderstood surroundings or imaginary dangers.

The renal disease and the mental disturbance may both result from a common cause.

In the few cases of "acute delirium" in which I have had an opportunity to examine the urine, it has been, I think without exception, heavily charged with albumin, and has contained large quantities of casts.

The pathology of these cases is obscure, and is very possibly not the same in all the cases presenting the symptom-complex of high temperature, great motor restlessness, utter mental confusion and rapid exhaustion; but whether the disorder is primarily toxic, it seems to me unlikely that the starting-point is in the kidneys.

But by far the most important class of cases coming under this head is that connected with the period of physiological involution.

It has, I believe, been officially decided that senile dementia is not insanity, in New York; but it must, I think, he conceded that no form of mental aberration is more disastrous in its effects, or reduces its victims to a more pitiable state.

The great bulk of the population of our institutions for the insane consists of persons who, in their best estate, were mentally or morally defective, and incapable of any very high order of service to society.

But that a man who, by his own merits, has raised himself to deserved eminence - a scholar, a statesman, a jurist, of world-wide fame and usefulness - should, by no fault of his own, sink below the intellectual level of the brutes, into a helpless, filthy, wretched existence, is enough to raise the question in all seriousness whether a life in which no wisdom or foresight can guard against such possibilities is worth living.

It is, I suppose, now generally admitted that chronic "Bright's disease " is not confined to the kidneys; that in addition to the renal changes, there is a wide-spread degeneration of the arterio capillary system.

There can, I think, be little doubt that senile dementia is due to malnutrition of the brain, probably due, to a great extent, to a deficient or ill-regulated blood-supply through the diseased vessels, although possibly in part to the direct effects upon the nervous tissue of the toxic agent that may be presumed to have caused the vascular degeneration.

When the coats of the arteries become diseased to any serious extent, they not only may fail to transmit a sufficient blood-supply, but lose the power of regulating the circulation of the various organs.

In addition, there is the possibility of haemorrhages and necroses in the brain from the rupture or complete obstruction of the diseased vessels.

The practically uniform presence of degeneration of the kidneys in senile dementia makes it altogether probable that they have a common cause.

To turn to a more cheerful aspect of the subject:

The thing that has struck me most in the course of this investigation has been, not the otherwise obscure symptoms explained by the condition of the kidneys as revealed by examination of the urine, so much as the comfortable, in many cases even robust health enjoyed by persons who were constantly passing very considerable quantities of albumin and casts in their urine." - Dr W. L. Worcester, MD in "The American Journal of Insanity", V.56, 1900.

Urinary Infection

"As regards treatment, it is necessary to guard against the stagnation of micro-organisms, hence their evacuation by washing out the bladder, incision and drainage, etc.

The elimination of poisons absorbed must be encouraged through the Emunctories." - Dr Pierre Bazy, MD leading urologist, in "Archives Généralde Médecine, June 1895.

*'**These organic changes as in; acute pneumonia, interstitial hepatitis, and nephritis, may be sufficient to account for death; but still the fatal result may be attributed in some of the cases to the necrosis of the glandular epithelium.** This necrosis occurs especially in the kidney, but is also met with in other glands. In the kidney, the necrosis may affect greater or lesser portions of the organ. In one case, where the patient died of pneumonia, the whole of the epithelium of the cortical portion of the kidney was affected. The necrosis is generally accompanied by an advanced degree of fatty degeneration of the renal epithelium.*

***The necrosis of the glandular epithelium in diabetes is due to the influence of toxic materials. That the kidneys are most affected, is due to their being the principal Emunctories of such matters.**" - Professor Ebstein of Gottingen in "The British Medical Journal", 22 October 1881.*

"Cholera patients will sometimes remain days without secreting a drop of urine, and yet recover. In such cases, I have no doubt that the urea is drained from the blood by the continued and enormous evacuations from the stomach and bowels. We have on record some truly singular stories of persons remaining for days, and even for weeks, without secreting a drop of urine, and who yet have continued in a good state of health. Some of these narratives are evidently altogether unworthy of credit; others are sufficiently well authenticated to demand at our hands a careful examination.

***The 2 most common Emunctories which supply the place of the kidneys, appear to be the Bowels and the Skin.** We have had an example of the effect of large evacuations from the stomach and bowels in cases of malignant cholera; for, with total suppression of urine, there is no coma. In the case of Dr Parr, there was no vicarious evacuation, except a profuse sweat for 1 day or 2. In this case there could not have been any imposture; the patient was in a hospital, and constantly watched. No mention is made of the state of the evacuations from the bowels." - Dr W. T. Gairdner, MD Pathologist to the Royal Infirmary of Edinburgh, in "London Journal of Medicine", August 1849.*

Chapter 13

The Lungs

"Here is the station where CO2 is put off and the life-giving oxygen taken on. The act of respiring is controlled by a centre in the medulla. Of drugs which affect this centre strychnine and opium are at the top of the list. To speak practically, ***the lungs are perhaps the most misused, if not abused, of any organ in the body.*** *Thousands of people live the greater part of their lives in an unhealthy, vitiated atmosphere.* ***Thousands of women and a good many men in breathing employ only the top lobes of their lungs.*** *The gospel of* ***deep breathing has done more for consumptive humanity than all the drugs and methods of treatment*** *in Christendom." - Dr W. T. Mares, MD in "The Medical Brief", 1905.*

Care of the Lungs

"The 3 essentials for maintaining life are air, water and food.

Because the air is all about us and we do not have to make a special effort to get it, very few realize the importance of air in the scheme of life.

Air is the most immediately necessary of all the life maintainers.

We can go without food 2 or 3 months; we can live without water several days; but if we are deprived of air for 5 or 6 minutes, life ends.

Very few die from acute deprivation of air, but multitudes perish every year whose departure is partly due to chronic air starvation.

Let us see why air, with its life-giving oxygen, is so important.

We might say that life is a fire, and that the human body is burning at all times, and that if the burning stops life ceases.

This is a literal fact. Fats, proteins, and a special form of sugar must be burned to keep up the physical energy and the necessary heat. Let this burning slow down, and the body grows chilly, and the individual becomes languid. Let the slowing process go further and the chilliness and weakness increase so that the individual has very little use of body and mind; let it proceed further and we have physical death.

We have to supply the materials to be burned (sweets, fats, and starches principally) in our food. But the material to keep up the fire comes from the air. It is like burning coal in a stove. The coal is carbon which unites with the oxygen, liberating energy which we use for heating purposes. If the air is shut out entirely the fire dies, just as an individual dies when the air is shut out of his lungs.

Air enters the lungs, and through hundreds of square feet of membranous lung

surface it enters the blood stream, for the essential of the lungs is a thin membrane with blood on one side and air on the other.

The oxygen filters through this thin membrane, unites with a compound in the red blood corpuscles, and forms oxy-hemoglobin. As such it is carried to all parts of the body, and the different tissues take what they need of it, combustion ensues, and as a result the body is heated and energized; also, as a result of combustion water and waste are formed.

The blood stream can take care of the water, but the waste has to be carried away. The carbonic acid gas must be thrown out of the body regularly, or else there is chilliness and clamminess—decrease of vigour and health.

The waste elimination is automatic if we breathe deeply, for the blood carries this poisonous gas back to the lungs, where it escapes outward while the oxygen enters the blood stream.

Fresh air rejuvenates, and aids in maintaining the individual young, strong, and healthy.

Not one person in twenty takes advantage of this blessing, which we can have in abundance without expenditure of time or effort.

Most adults, especially the women, breathe with only the upper part of the lungs.

Watch a baby breathing and learn the correct way.

The abdomen rises with every inhalation and falls with every exhalation. Adults should breathe in the same manner, called diaphragmatic or abdominal breathing. In order to do this it is necessary to dress correctly, and one item in correct dressing is to avoid tightly constricting bands or garments about the waist.

Acquire correct breathing habits.

Let the waist line be free; then throw the shoulders back, close the mouth and inhale slowly and fully through the nose.

Pay no attention to the chest while doing this.

Fill the lungs, as you should, and the chest will of itself expand to the sides and forward, and the abdomen will rise.

After filling the lungs, slowly exhale, and expel the air partly through the mouth, if you wish. Repeat this a dozen or more times. It is well to take this breathing exercise 3 times daily when in the open air, until the habit of deep breathing is firmly established.

It helps to keep the internal organs clean, and cleanliness means health, and health means vigour and prolonged youth, which can be made the foundation of a successful life.

Arrange to have air freely entering the bedroom both summer and winter. There is no need of having a draught blowing over the bed.

Great lung capacity is an indication of large vital capacity. Get the habit of filling the lungs with good air during the day, and have plenty of fresh air at night.

A free supply of oxygen is necessary to keep the blood clean. Cleanliness is health." - Dr Rasmus Larssen Alsaker, MD in "Outwitting Old Age", 1926

The Excretory Function of the Lungs

"The lungs, are the chief decarbonizing organ of the body.

The venous blood, with which are commingled the chyle and lymph, is the carbonized and impure blood which enters the right side of the heart, and by it is sent to the lungs, where the process of decarbonization takes place, through contact with the oxygen of the air inhaled.

It is returned from the lungs to the left side of the heart in the character of arterial, oxygenized, and vital blood. **It is then sent by it into all parts of the body."** - John Smedley in "Practical Hydropathy", 1870.

Function of Pancreas in Metabolism

"Ugo Lombroso has recently published a report of considerable experimental work on this subject. He found that the disturbances caused in dogs by ablation of the pancreas were not modified by introduction of pancreatic juice into the duodenum under conditions closely approximating the normal.

This demonstrates, that the disturbances can not be the result merely of the lack of the pancreatic juice, but that they must be due to a missing internal secretion of the pancreas.

This assumption is favoured by the singular persistence of the islands of Langerhans after ligature of the pancreatic duct in rabbits. This persistence suggests that these islands participate in some internal secretion independent of the secretion of pancreatic juice. Lombroso's work is reviewed in the Gazzetta degli Ospedali, No.68, 1906." - in "JAMA", 1 Sepember 1906.

Chapter 14

The Skin

"This being the greatest Emunctory In the body is oft-times not regarded with sufficient importance. Nearly three millions of sweat glands are constantly at work throwing off poisonous matter. To close these up by enveloping the body with an impervious coating would produce sudden death. We know the effects of chilling or dampness of the skin, especially in the very young, aged or debilitated. Cystitis and pneumonia are invited. Fever reduction being a goodly portion of the doctor's routine, the skin offers the most salient opportunity for this. To lower fever heat production should be lessened, or heat loss should be encouraged through radiation." - Dr W. T. Mares, MD in "The Medical Brief", 1905.

"Emunctories of the inner body and of the capillary circulation: For the Natural condition of the anaemia is to create that poor elimination, both in the Emunctories of the inner body, and of the capillary circulation, to say nothing of the stress as is produced on the respiratory system."

"Emunctories & Perspiration:
Under the arms, in the groins, about the waist and the elbows, under the knees, are those areas where the Emunctory circulation is nearer the surface.
And these in the circulation, owing to the conditions of the general circulation between the heart, the liver, the kidneys, are such that these are acting, as it were, for the breathing spaces of the lymph and Emunctory circulation. Thus, with the less heat, it makes the perspiration throw off poisons from the system in those areas only."

"Treatment by the Emunctories is an old-established method, but far too little attention has been paid to the skin and to the effect of sweating on the mucous membranes; probably civilized peoples sweat themselves too little and pay a price in catarrhal affections." - Dr James Adam, MD, in "Bath Treatment for Deafness", British Medical Journal, 11 April 1931.

***"Congestive Asthma is relieved by set ting up a good action of the skin and other Emunctories of the body."** - in "The Medical Brief", 1905.*

It is important to understand, from the outset that there are no diseases of the skin. When looking at the skin it is crucial to always remember that the skin (among other things) has the function of an Emunctory. Thus its state, or condition is either in origin: Functional (external causation, accident) or Organic, the result of metabolism, from; either faulty nutrition, or lack of nutrition.

It is also important to bear in mind the essential role that sun light and its ultraviolet rays, play in the health of the skin.

"The skin forms the outer covering of the body, and protects the parts beneath it. It may be compared to a lined garment, for it is composed of an outer and inner layer. When the skin is accidentally blistered by boiling water, the fluid in the blister is between these two layers.

There are large numbers of very small sweat glands in the inner layer of the skin. Each one of these has a little tube that leads out to the surface of the skin. If the hands are very warm, you can press on the end of one of the fingers and see the little drops of sweat coming out of the mouth of the sweat tubes.

The sweat is not all composed of water; in addition, it contains salt and waste matters. These waste matters are very similar to those in the urine.

If the kidneys and the skin did not eliminate these waste matters, self-poisoning would result very quickly.

The skin alone eliminates a large amount of poisonous matter. If the skin were coated with some kind of paint or varnish, so that the perspiration could not escape, death would occur in a few hours.

Many people think that it is only when they can see perspiration on the skin, that they are perspiring. This is a mistake.

Perspiration is continually issuing from all the sweat glands of the body; but much of the time it comes out so slowly that it evaporates and disappears at once, and so cannot be seen.

Warmth and exercise increase the amount of perspiration. It is well for every one to take sufficient exercise daily to cause free perspiration, for this not only keeps the skin active and healthy, but also helps to keep the blood clean and pure.

After perspiring freely, one may see, as soon as the perspiration dries up, a thin layer of salt left on the skin.

This salt comes out of the body in the perspiration. Together with the salt there are other waste matters.

These waste matters cause the skin and clothing to have a foul smell if the body is not frequently bathed. If the salt and waste matters and dust that are constantly accumulating on the surface of the skin are not removed by frequent bathing, they will clog the mouth of the sweat ducts, and interfere with the work of the sweat glands.

Thus poisonous matter accumulates in the blood, and sickness results.

In hot climates every one should bathe the whole body daily. Even during the cold season a cleansing bath should be taken two or three times a week.

For purposes of cleanliness, it is best to use warm water and soap.

A bath in cool or cold water, followed by vigorous friction with a towel, is an excellent tonic to invigorate the body and strengthen it so that colds and other diseases will not be contracted easily.

The best time to take a cool bath is in the morning. A cool bath should never be taken when one is hot or tired. Neither should a warm or cool bath be taken immediately after eating.

When the weather is very hot, and a bath is taken to cool the skin, the best method is to use a spray. It is important that people who are in good health bathe frequently in order to ward off disease. It is even more important that those who are sick be bathed daily; for the waste matter that accumulates on the skin during sickness is not only larger in amount than during health, but it is also more poisonous.

Most sick people would recover much more quickly if they were bathed daily.

There is no danger of the sick person catching cold if bathed in a proper way.

The water should be warm. First bathe the right arm, and dry, and cover it; then bathe the left arm, and dry, and cover it; then bathe the front of the chest, and dry, and cover it; and so on for the whole body. In this way all danger of the sick person's taking cold may be avoided." - Dr A.C. Selmon, MD, in "Health And Longevity", 1940.

Functions of the Skin

"I wish you especially to keep in mind that the skin is highly furnished with blood-vessels and nerves, and that it performs most important functions. It

Performs at least four; three of which are organic, and one is animal, namely, secretion, excretion, absorption, and sensation. The last-mentioned is the one animal function which the skin performs, and which serves, as you know, most necessary purposes.

The principal excretion of the skin is that of the perspiration. This is both sensible and insensible. The former is commonly called sweat, the latter is invisible; but it is constantly going on, so that a great amount of matter passes, in this way, out of the human body every day.

You are aware that the sweat, or visible perspiration, is the great means of regulating the heat of the body when it is exposed to a high temperature, especially in tropical climates, and in the hot summer weather of our country. The evaporation of the fluid perspired is a cooling process.

Lets not forget that carbon is constantly separated or excreted by the skin from the blood; and thus you perceive that in this action it aids the lungs in their great process of depuration or decarbonization. Remember, however, that another great office of the skin is to relieve the blood of its excess of water, of which hydrogen is the chief element. You see, then, that **the 3 great organs for depurating the blood of carbon and hydrogen are: lungs, liver, and skin.**

They are closely connected in function, so that, under certain circumstances of climate and habits, they become vicarious, that is, they act for each other.

Let me fix your attention on the extent and importance of the functions of the skin; and especially on the great fact that this extensive organ of 4 functions is the very appropriate field of operation for the water cure. No wonder that this has proved the most efficacious of all curative means ever practised against the diseases of the human body." - John Smedley in "Practical Hydropathy", 1870.

Care of the Skin

"The skin may appear as merely a covering, or a protection to the underlying structure. This is an important function, but the skin has several functions of even greater importance. It helps to regulate the heat of the body, which is absolutely essential to health.

If the bodily temperature goes much above or below 38 C (which is the internal temperature of the body) we have some kind of illness. If the weather is cold, the openings of the skin contract, thus preserving the heat. If the temperature is high, all ventilators open, and in addition moisture is poured out in the form of perspiration. This moisture evaporates and cools the body. The body perspires more than the average individual is aware of, for the slow form of perspiration is not apparent, the moisture evaporating as soon as it reaches the surface.

The skin is also one of the cleansing and eliminating organs, sharing in this work with the lower bowels, the lungs, and the kidneys.

This function is so important that when very large areas of skin are destroyed the individual dies, poisoned by his own secretions.

Most persons have read the story of the boy who was covered with gold leaf, and died as a consequence.

> *"The skin, as you can see through the microscope, is full of little holes or pores. Through these the moisture called perspiration comes, and also a kind of oil, which keeps the skin smooth and soft. Now, if anything chokes up these little holes, so that the moisture cannot come through, the person becomes ill. That is what happened to the little golden boy. The gold leaf stopped up the pores in his skin, and caused an illness of which he died. You see now how important it is to keep the skin clean. For the dirt and dust that we get upon our bodies mixes with the oily fluid I have spoken about, and forms a coating over the pores. You have seen how careful engine drivers are to keep their engines clean. Well, our bodies are machines far more beautifully made than a steam engine, and it is our duty to ourselves to keep these wonderful machines in perfect order. We must wash not only our hands and faces, but also the whole of the body; for sweat comes from every part of the skin. The people who take baths often not only keep themselves in good health; they also keep their minds fresh and their spirits cheerful." - in "The Way of the Hills", 1916*

It sounds true, for if the skin is sealed, the poisons can not escape by way of the sweat glands, which eliminate various gases, acids and salts that are injurious to the body. Fatty waste is also eliminated by way of the skin.

The skin contains millions of sweat glands, each of which opens on the surface by means of a tube. These sweat glands take water and waste out of the blood stream and discharge them through a duct that goes to the skin surface.

The skin, especially the hairy part, contains numerous sebaceous glands, which excrete a fatty matter (sebum).

What about bathing?

It is not one-tenth as important to keep the skin clean as it is to keep the bowels clean, for ordinary filth will not interfere with the skin function.

It is not half as important to bathe the skin as to rub it. But cleanliness is a fine thing. It makes for self-respect, and it makes this world a more pleasant abiding place.

There are certain individuals whom we avoid because they offend our noses.

Self-respect demands cleanliness. Those with serious heart and kidney disease should make their baths short, and avoid shocks coming from sudden immersion in cold water.

Shower baths are best for them. It is not good to shock the body by jumping into very cold water.

Those who want to take cold baths should first get into water that has been slightly warmed, and then mix in more and more cold water until the desired temperature is reached. Those who have showers can regulate it so that at first the water is warm and then gradually shut off the warm water, letting the cold run. This prevents all shock.

After finishing the bath, dry well; this is a good time to spend 5 or 6 minutes giving the body dry friction. Keep the blood pure and thus maintain health.

Those who have health, have that beauty which is inseparable from health, no matter how irregular the features may be.

Many are put in the beauty column through the radiance of good health. These people lose their beauty if they lose their health. Some are so favoured with fine figures and fine faces that they can not help being beautiful, at least while youth lasts, but rashes on the cheeks, pimples on the chin, greenish eye-balls, muddy complexion—none of which happens in health—detract much from the looks of the most favoured.

The most important part of the care of the body surface is to maintain the skin as a normal eliminating organ." - Dr Rasmus Larssen Alsaker, MD in "Outwitting Old Age", 1926.

Skin Diseases

"There is only one secret of a fresh complexion, and I give it away in one word: Elimination. If the drainage system is not working properly, morbid matter circulates in the blood and clogs the millions of cells that form the human body. The tiny capillaries or little blood-vessels become choked, and a muddy skin and cold extremities are among the perceptible results. When a person is constipated the toxins absorbed into the circulation add heavily to the work of the skin, the kidneys, and the lungs, and these may break down under the strain. Many so-called skin diseases are really purifying efforts of Nature, and if one thwarts this health promoting process by powerful ointments, the life of the individual is definitely shortened. Clean blood is the only true cosmetic. The only adjunct required is water, and the skin responds best." - Clement Jeffery, MA, in "Positive Health Without Knife or Drugs", 1928.

By looking at the skin, and veins, it gives us an indication of what is going on with each individuals diet, their metabolic process and state of their gastrointestinal organs.

Of which the skin is their dashboard, thus signalling to each individual, the wrongs of their faulty (bad diet), and errors in nutrition. An important clinical point is that the: tongue, teeth, nails and hair of each individual, can also give several other clinical indications in regards to faulty, or deficient nutrition. There are no skin diseases as such.

These are metabolic conditions in the body organs, that are manifested, among other places upon the skin, due to faulty diet.

Thus the residue from the metabolism of digestion from faulty foods become poisons, which have been assimilated in the system, and eventually some, or all may show up in the capillary circulation.

All organic skin conditions can be resolved by:

1. Changes to Diet,
2. Hydropathic Treatments.

Lymphatics of the Skin

"The skin has a very rich lymphatic network, which is connected to the main lymphatic basins in the groin, axilla, and neck, but also to several less well-known lymph node locations." - Dr P. J. Tanis, MD in "The Anatomy & Physiology of Lymphatic Circulation", 2013.

General Etiology of Diseases of the Skin Their Relation to the General Organism

"Charles Lorry, the real founder of dermatopathology, first made a division of diseases of the skin into those which are the result of a general morbid process (symptomatic), and those in which the integument suffers independently (idiopathic).

1. It has always been held that the so-called acute exanthemata, likewise the various affections of the skin in typhoid fever, cholera, glanders, syphilis, scrofulosis, and tuberculosis; certain furuncular processes, the deposit of morbid substances, hemorrhages into the skin and subcutaneous tissue, eczema and the like, in diabetes, gout, rheumatism; seborrhoea, acne, alopecia, eczema, urticaria in anaemia and chlorosis, furthermore in scorbutic and leukaemic disease of the blood and the like, must be regarded as diseases of nutrition.

2. Diseases of the circulatory organs, which are followed mainly by stasis dermatoses. Diseases of the organs of the vegetal system, the gastro-intestinal tract, liver, spleen, kidneys, suprarenal capsules, to which the most varied forms of skin diseases may be due, such as erythanthemata, urticaria, pruritus, etc.

The Superficial Inflammations of the Skin

Hyperemia (excess of blood), however, is often merely the initial form, and passes into erythema (redness of the skin) in its further course.

For inflammatory irritants usually act upon the skin in such a manner that they affect, at first, the small supplying artery which constitutes the centre of a small vascular district (to which, as a rule, a few papillary vascular meshes belong).

Here the earliest trace of redness is first shown, and as the centre of such a vascular district often corresponds to the centre of the vascular circle which is formed under each follicle of the skin, this punctate redness often appears as a darker central elevation which is formed by the excretory duct of the follicle.

Tumours of the Skin

Lympho-sarcomas, in general, will be still more malignant than the endothelial sarcomas.

Otherwise, in one as well as in the other, the tubercles will progressively enlarge at the expense of the surroundings, young tubercles will appear by the side of the old, and coalesce with them; soon the lymphatic glands in the neighbourhood swell, usually into tubercles with medullary softening; then the affection spreads by metastasis to nearly all the lymphatic glands of the body, to the lung, liver, serous membranes, kidneys, etc.

Hard and superficial forms, when removed in time, will offer a more favourable prognosis than soft and deeper forms." - Dr Hugo Ziemssen, MD, Professor of Clinical Medicine, Munich, Editor of Ziemssen's Cyclopaedia of the Practice of Medicine, in "Handbook of Diseases of the Skin", 1885.

Skin Lesions Due to Toxemia

"Many skin lesions are due to toxines or Toxemia and in these instances also the powerful Emunctorial Stimulation afforded by Hydrotherapeutic measures can he called to aid." - Dr William Hermann Dieffenbach, MD in "Hydrotherapy: A Brief Summary of the Practical Value of Water in Disease", 1909.

Ultra Violet Rays and the Skin

"Most rheumatic sufferers have an excessive acidity of the blood stream. General Ultra Violet irradiation counteracts this and produces an alkalinity of the blood.

Rheumatic patients are notorious in that they feel the cold acutely and also changes in meteorological conditions.

This is due to the fact that the autonomic nervous system, and hence the vasomotor system, are functioning imperfectly.

The temperature of the skin is subnormal and it loses its power of secreting and excreting. Ultra Violet irradiation improves the skin circulation not only temporarily but for a long period, the power of secretion and excretion returns, and thus the patient is able to react normally to changing meteorological conditions.

Elimination by skin, lungs and kidneys is increased and toxic products are removed from the tissues." - W. Annandale Troup, MD "Treatment of Rheumatism and Allied Conditions", 1947.

"It may here be observed, that the process employed by nature appears to be the elimination of the morbid poison by the skin, and by the kidneys in the form of urates, and that whenever this elimination is going on freely and safely there is no ground for promoting it by active remedies.

But, on the other hand, we must remember the liability to the accidents of the disease, which are of very grave character, in the form of internal inflammation, chiefly affecting the heart, diaphragm, and pleura (though serous and fibrous tissues elsewhere do not always escape), and that these accidents are more liable to arise when the elimination of the morbid poison is suspended." - Dr G. Owen Rees, MD, FRS, in "Cases of Acute Rheumatism Treated by Lemon-Juice with Remarks", Guy's Hospital Reports, 1866.

Arteriosclerosis and Diseases of the Skin

"Sometimes diseases of the skin seem to have a common cause with arteriosclerosis.

This is evident from the fact that it is not at all an-unusual experience to find chronic diseases of the skin improving vastly on the same regimen that is prescribed for concomitant arteriosclerosis; this has been particularly noted in the victims of chronic eczema.

The few-protein diet, the out-of-door exercise, the attention to intestinal conditions and the relief of disturbances of blood pressure, instituted for the improvement of the arteriosclerotic condition, have brought about a noted retrogression of skin conditions, not only of the gross lesions, but decided improvement in the itching which had been troublesome for months or years.

The relation between skin diseases and food has always been recognized, so it is not surprising that diseases of the skin should be fairly frequent in the subjects of arteriosclerosis, the latter being, also, the outcome of disturbed metabolism.

Mr. A. illustrates the relation between arteriosclerosis in its early stages and skin disease, and also, the fact that a regimen directed against the development of arteriosclerosis sometimes removes the most troublesome skin symptoms.

His progress, so far as the relief of the intestinal putrefaction and the headaches, was quite rapid, but only after a number of months was the itching relieved.

He was put upon a few-protein diet, with the systematic use of castor oil at long intervals.

The patient had laid most stress upon his headaches and precordial distress, but expressed extreme gratitude when he had been relieved from the pruritus which had been of such long standing.

It is a pleasant concomitant of treatment in arteriosclerosis that the complexion and skin in general improve in condition coincident with the increased sense of well-being. A patient said that his "heart was not acting right." Recognizing his chronic indicanuria (abnormally high concentration of indican in the urine) as an indication of persistent disturbance of the chemistry of the body, it was explained to him that a strict regimen would be necessary to overcome the heart symptoms.

He was put upon a selected few-protein diet, and told to take a dose of castor oil every 10 days.

He recovered from his cardiac discomfort, and was so thoroughly well on the new regimen that he continued it.

Much to his surprise, the eczema that had been trouble some for years, began to improve, with the result that one year after the institution of this regimen it had receded to such a degree as to present no activity at all, and even a good deal of the thickening of the skin had disappeared.

Many observers have noted the association of cutaneous angiomata with cancer, for they may result from vascular degeneration produced by cachexia (loss of weight, muscle atrophy, fatigue, weakness and significant loss of appetite) and chronic toxaemia in malignancy, especially cancer.

Aetiology of Cutaneous Angiomata

1. Some defect of endothelium of the blood vessels.
2. Intoxication of the cells of the intima caused by circulating toxins which possess a selective power upon endothelium and termed "hemorrhagins."
3.Such factors as favour elevation of tension within the blood system, and among which may be mentioned over-eating and over drinking leading to angiectasia.
4. A variety of organic lesions bringing about obstruction or blocking of the blood routes with resulting extreme and prolonged tension.
5. And finally, as so well expressed by Todd:

> *"Sub-oxidized products of retrograde tissue-metamorphosis possess properties toxic to the delicate endothelium lining the blood paths, as may also the mal-elaborated results of defective gastric and intestinal digestion, of hypopepsia, of pancreatic insufficiency, etc. These autochthonous substances, moreover, are believed by competent observers, notably, Bouchard of Paris, Robert Pugh of Edinburgh, and Haig of London, to possess toxic influence on the vasomotor ganglia and nervules, and in this way to be active factors in the induction of vaso-fibrosis in its various forms, notably arteriosclerosis praecox." - (Todd, R.N. in "Dermangiomata and Their Significance in Diagnosis, with Special Reference to Arterio-Capillary Sclerosis", Central States Med. Monit., 1908, XI)*

Raynaud's disease, the simplest form of which is the phenomenon called "dead fingers," may be classed, as a peripheral, arterial complication of arteriosclerosis.

A sensation of local coldness and pain are often precursors, and as a rule are associated with vasomotor gangrene.

The vasomotor phenomenon called Raynaud's disease, is a vascular disorder which may present one of 3 stages:

1. Local syncope;
2. local asphyxia;
3. local or symmetrical gangrene.

The most characteristic condition of the first stage is the so-called "dead fingers," already alluded to. Chilblains are a feature of the second stage; marked congestion exists and there is sometimes great pain.

The third stage is one of gangrene, mild or severe as the case may be." - Dr Louis Faugeres Bishop, MD in "American Journal of Dermatology and Genito-urinary Diseases", V.17, 1913.

On the Functions of the Skin
in Relation to
Life, Health and Disease

"A great part of Sanitary Science can be comprised in that one word: Cleanliness." - Dr. Lyon Playfair

"It may appear somewhat superfluous in the present state of civilization to seek to impress the public mind with the advantages of bathing.

But while admitting the improvements in cleanliness that have taken place during the last 25 or 30 years, particularly amongst the middle classes, it will not be denied there is still room for further enlightenment, especially when we consider that there exists a large amount of absolutely forced uncleanliness amongst the working classes, not only in the metropolis, but in many of the towns and cities of the United Kingdom.

Whatever obstacles there may be in the way of improving the condition of the lower orders who form an important part of the community, and (assuredly no permanent good can be effected without acting upon their physical surroundings) we must admit that there exists little real difficulty in supplying them with adequate Baths and Washhouses, and even were the difficulties as formidable as they are insignificant they ought not to be allowed to stand in the way of the important end in view, viz., the physical and moral elevation of the people.

In the 19th century it ought to be unnecessary to introduce remarks on the skin, but the want of public knowledge on the importance of keeping it clean in order to maintain the bodily health, has urged me to do so.

I am sorry to say there are but few, even of the educated public, who have that practical knowledge of the physiological action of the skin, which is necessary to an appreciation of the value of bathing, for the maintenance of a healthy condition of the animal economy.

The skin, is a delicate integument, which envelops and protects the wonderful and complex organism of our physical frame, and in an adult it has an extent equivalent to about 15 square feet, or 2160 square inches.

Though to the eye it appears to be a single and somewhat simple tissue, it really consists of three layers, differing very materially in structure.

The internal layer is the cutis or skin proper, which is plentifully supplied with blood-vessels, nerves, and absorbents, and is consequently very sensitive.

The external layer is the epidermis or cuticle, or the scarf-skin, as it is commonly called.

It is a thin elastic, albuminous membrane, and, being destitute of blood-vessels and nerves, is comparatively devoid of sensibility.

Between the skin proper and the cuticle is the rete mucosum, an indistinct layer, unless, as in the negro, it becomes the seat of the pigment from which his colour is obtained.

The surface of the skin is studded over with an amazing number of minute pores, forming the mouths or openings of the canals or ducts of the sudoriparous glands and sebaceous follicles, situated in or below the skin.

These little glandular organs are continually secreting and excreting, the one a watery, and the other an oily fluid, which lubricate the surface and impart pliancy and softness to the skin.

The openings of the canals may be readily seen, and their number estimated by a simple microscope on the points of the fingers.

By means of a powerful lens, Erasmus Wilson was enabled to count the number of pores in a square inch of bodily surface, and hence to estimate, with a close approach to accuracy, the total number of pores in the whole body of an average sized person.

He found these to be not less than seven millions, and as each pore represents a little tube a quarter of an inch long, it follows that the length of excretory tubes in the skin is little short of 28 miles.

Now the greater portion of the blood flows through the vascular network of the true skin; and it is important to bear in mind this extreme vascularity, as we generally find organs supplied with blood in proportion to their importance in the animal economy.

The function of the skin is threefold:

1. Absorptive
2. Secretive
3.Excretive

it is also the seat of the sense of touch.

Absorption Abilities of the Skin

The absorptive function of the skin is illustrated by the rapidity with which water is frequently absorbed when the body, under certain conditions, is entirely or partially immersed.

Experimenters have often found that if the body, after long fasting, or exhaustion by severe or protracted labour, is plunged into a warm bath and kept there for half an hour, a marked increase of weight ensues.

This function of the skin is, perhaps, more clearly shown by the endermatic method of administering medicines.

Medical men are well aware that many medicaments, when applied to, and especially when rubbed into, the skin, produce their known effects as rapidly and completely as when introduced into the stomach or directly into the blood.

Secretive

Secretions: Sudoriferous glands secret sweat, which is also called "perspiration". Apocrine glands secret a sticky viscous secretion while the secretion from eccrine glands is thinner; watery by comparison.

The main functions of the secretion of sweat are to help regulate body temperature and to help eliminate from the body some of the waste products of metabolism (i.e. metabolic reactions).

Excreting abilities of the skin

As an excreting organ the skin is of great importance.

It is estimated that about 1/5 of the whole excrementitious matter of our bodies is exuded through the skin.

Its primary office is to separate from the blood the effete hydrogen in the form of its superabundant watery particles.

It has, however, many important secondary offices.

The chief cutaneous excretion, the perspiration is of 2 kinds;

1. Sensible perspiration: which is a fluid occasionally excreted, as after severe exercise;

2. Insensible perspiration: or transpiration, an invisible vapour which is continually being given off by the skin.

The sweat, or sensible perspiration, is essentially an aqueous fluid, but it holds in solution a very great variety of substances.

Its taste is saltish, and its reaction acid. Chloride of sodium (common salt); salts of ammonia; the salts of the organic acids; butyric, formic, acetic, lactic, and carbonic-acids; earthy phosphates; peroxide of iron; pigmentary, fatty, and proteine matter, and nitrogen, are always found in it.

Various estimates have been made of the quantity of matter exhaled, in the form of perspiration, from the surface of the skin of the adult human body in 24 hours.

These are in average 800ml.

Seguen found from experiments the amount to be 15,840 grains, or about 900ml.

According to the carefully-conducted experiments of Anselmino, the sweat contains, on an average, .088%, of solid matter, 100 grains of which gave 22-9 grains of saline matter: these calculations give for the 24 hours, 107.47 grains of organic matter, and 81.92 grains of saline matter.

These are the principal substances thrown off by the skin when in a healthy condition.

In various diseased conditions of the organism, however, the skin becomes the medium of discharge from the body of poisonous substances, either producing or resulting from disease.

Mental Complaints

For instance, carbonate of ammonia and uric acid have been discovered in the perspiration in a variety of diseases, especially mental complaints.

In such cases the skin usually assumes, in addition to its own proper offices, a compensatory function, in consequence of the diminished activity of, and secretion from, internal organs.

Excretion is an all-important depurating or purifying process; if the worn-out tissues of the body are not duly removed from the blood and discharged from the system, they rapidly accumulate and act as the deadliest poisons; and the worst consequences to health and life often result.

There is no greater and more just cause of alarm to the physician than the cessation or suspension of customary discharges from the various excretory glands and canals.

Should the renal secretions be suppressed, urcemic poisoning and death from the accumulation of urea in the blood is the result.

Should the biliary function be suspended, bile accumulates in the blood, and insensibility and death as inevitably follow as in the former case.

Again, should respiration be interfered with, the effete carbon is retained in the system, arterial blood becomes venous, the brain is poisoned, and then the action of the heart stops. But it often happens that a function is temporarily suspended, the functional activity of an organ diminished or arrested, while its duties are undertaken by another organ until it has recovered tone and energy.

This increased activity, this augmentation of duties, on the one hand, is imperatively necessary to neutralize the lessened energy of the suspended function, on the other; otherwise the balance of the different functions, on whose integrity health depends, would be lost, and permanent disease, speedily terminating in death, would result.

Now the skin often partially or wholly relieves the lungs, kidneys, intestines, and other internal excreting organs, of their important duties.

In disease of the kidneys, for instance, the skin sometimes eliminates in the form of carbonate of ammonia, the urea which accumulates in the blood and would otherwise act as a deadly poison.

The functions of the skin and the kidneys stand in so close a relationship, that they often assume the place, to a great extent, of each other, so that when the skin is impaired, the kidneys increase in activity, and vice versa.

It is in this way that the balance necessary to life is maintained; but this compensatory action is limited, so that the one organ cannot wholly, or permanently, or, indeed, for any length of time, supply the place of the other.

The most casual observer will have noticed that, in hot weather, when the skin is active, the quantity of perspiratory matter thrown from the system is increased, and the quantity of urine passed is diminished, while in cold weather this is reversed.

It is a too common occurrence, when scarlatina (scarlet fever) is treated without a proper attention to, and the regulation of, the functions of the skin, as is the case with "old physic," that a sequel sometimes extremely difficult to deal with supervenes, namely, dropsy.

Scarlatina (scarlet fever), being an eruptive disease of the skin, obstructs the escape of the perspiration, and causes the fluid to accumulate in the system.

The kidneys will for a time succeed in relieving the patient.

But if the skin is not speedily restored to its normal action, dropsy is inevitable.

In case of disease of the renal functions the skin relieves the kidneys of their duties, which is witnessed by the fact that the fluid eliminated contains some of the substances common to urine.

A marked functional sympathy also exists between the skin and the intestines, which is best illustrated by the effects of unhealthy or diseased state of the one upon the other; hence the tendency to diarrhoea from cold feet on the one hand, and the connection between cutaneous eruptions and intestinal irregularities on the other.

These brief illustrations might be almost indefinitely extended; but they are sufficient to show the important relation existing between skin and the internal organs.

When the removal of effete watery matter from the blood is stopped, the labour of elimination is added to the ordinary duties of the internal organs.

Were this vicarious action of but short duration, no permanent mischief would probably accrue.

But all the organs of the body are liable to become exhausted by overexertion, if long continued; and this exhaustion if not remedied, will sow the seeds of, if not terminate in, disease.

If the functions of the skin are long suspended, either partially or entirely, not only are the lungs likely to become diseased, but almost all the internal viscera will suffer sooner or later.

It is of the greatest importance that the integrity of the skin should be preserved in order to resist cold, and however paradoxical it may appear, it is also capable of generating cold.

The human body has a fixed temperature, beyond which it cannot be raised by external heat; when therefore the external heat exceeds that of the body, this is compensated by increased perspiration which is converted into invisible aqueous vapour, and is essentially a cooling process. This is the reason why the human body has been found capable of resisting artificial temperatures greatly higher than boiling water hence in summer, in tropical climates, or artificial high temperatures, perspiration ought to he encouraged and not checked.

Erasmus Wilson, in his work on the skin, instances the fact that Sir Charles Blagden supported a temperature of 127 C for nearly 10 minutes. The furnace in which Sir Francis Chantry was in the habit of drying his moulds was heated to a temperature of 177 C, and into this his men occasionally entered without inconvenience.

The oven used by Chabert during his exhibitions in London was heated to between 205 C and 315 C.

Such, then, is the wonderful system of cutaneous drainage which nature has provided to eliminate from the body impurities that otherwise would not only derange health but destroy life.

The skin is also a medium for the reception of impressions on the nerves, its whole surface being one vast network of those mysterious organs; which explains the intimate relationship and dependence existing between healthy skin action and mental equilibrium.

From these considerations it must be patent to everyone how supremely important it is that the skin should be kept clean, in order to preserve its normal action.

The human frame is admirably adapted by the laws of its being for the realization of happiness, yet we find daily it is an unfailing source of pain and discontent to multitudes, a state antagonistic to the benign intentions of our Creator, and the result of transgressing those laws by virtue of which "we live and move and have our being."

Health essentially depends upon obeying certain conditions which experience teaches us it is impossible to violate, or even modify, without incurring suffering.

We may conclude also that according to the extent of our transgressions so will be the intensity of our sufferings.

Physically, we live under a stern mandate — Obey and live! disobey and die!

Disease and consequent suffering everywhere presented to our view are but the reflex of our own actions.

Our acquaintance with life and its conditions, even today, is so imperfect that we can do little more than say with the Psalmist, "We are fearfully and wonderfully made", yet our knowledge is sufficient to guard us from blasphemously attributing the sufferings of mankind to the will of God.

The sentence pronounced upon Adam: "In the sweat of thy face shalt thou eat bread," (Genesis 3.19) misrepresented as a curse, is but the assertion of a law which we can only neglect or disregard under penalty of bringing upon ourselves painful consequences.

Did we but follow this primaeval teaching, and live and work in the open air, with our bodies so clothed as to allow the skin literally "to breathe," a healthy balance of the functions would be maintained, and disease would become, comparatively speaking, rare.

But our so-called civilization imposes such restraints upon us, obliges us to follow such unnatural callings, and withal environs us with surroundings so opposed to health, that our existence must be taken as the strongest possible evidence of the aboriginal strength of the race.

Upon no organ do the present unnatural modes of living produce more certain effect than the skin. The man who follows an employment entailing great physical exertion in the open air is rarely a diseased man.

His labour excites the skin, and what would otherwise become poisonous and productive of disease is eliminated from the system.

As an evidence of this — his shirt, worn, as is the usual custom, for a week, smells abominably; but if the man's shirt is dirtier than that of his employer, who performs no physical labour, his body is so much the cleaner — his health immeasurably better, and, all other things being equal, his life will be longer.

With the evils incident to our civilization clinging to us, and with no immediate prospect of their being removed by a general return to a strict observance of nature's laws, it remains for us to do the best with the materials at our command.

The art of preserving and restoring health by artificially inducing a natural action of the skin, has, at various periods, received a large amount of attention; but of all the means that have been - resorted to, there are none which have equalled in point of efficacy the application of water in the various forms of bathing practised throughout the world.

As a Custom, Bathing is as Old as Humanity

In fact, the desire to bathe for the purpose of refreshing and strengthening the body is as ingrained in man as almost any other animal instinct.

The babe crows with delight when put into the bath; the youth takes to the water like a young duck; the adult bathes his limbs after the toils of the day with the most unfeigned pleasure.

The savage or semi-civilized man seeks the pellucid brook, the river, or the sea, as instinctively as he provides for any other natural want.

Thus, in a natural state of society, sensation, in lieu of knowledge, serves as a guide to health.

When, however, in consequence of the increase of population, large and densely crowded cities have, by inducing vitiated habits and artificial tastes, perverted the natural instincts, the invariable result has been disease and physical deterioration, until knowledge has taken the place of ignorance.

Thus it arose, doubtless, that amongst nearly all early peoples, the lawgivers, seeing the inseparable connection of personal cleanliness with health, and perceiving also that the very circumstances which tended to augment the power and prosperity of the state militated against the physical well-being of the people, saw fit to make periodical lustration a religious observance.

Be that, however, as it may, certain it is that in nearly all ancient nations we find the bath occupying a prominent place amongst their other institutions, it being regarded not only as a luxury, but as a means for the maintenance of health and the prolongation of life.

Amongst no people was this so marked as with the Greeks, who, above all others excelled in the art of corporeal development.

Physical culture (or gymnastic) was their first and foremost branch of education, and, as might be expected, the bath was one of the principal means employed for attaining their end.

We can scarcely turn over the pages of any of the writers on Greece without being struck with the importance which was there attached to bathing.

In Homer we find frequent mention of it, both as a luxury and as a method of refreshing the mind and strengthening the body.

When Ulysses and Diomed return from their night expeditions;

"They cleanse their bodies in the neighbouring main:
Then in the polish'd bath, refresh'd from toil,
Their joints they supple with dissolving oil."
Iliad, Book X.

In the "Odyssey," we read of Ulysses bathing in Arie's palace:
"An ample vase receives the smoking wave;
And in the bath prepared, my limbs I lave:
Reviving sweets repair the mind's decay,
And take the painful sense of toil away."

We are told, also, that Vulcan, or, according to another version, Minerva, discovered certain hot baths to Hercules, that he might renew his strength after undergoing severe exertion and fatigue.

According to Homer, the Phoedrians laid great stress upon the importance to the health and happiness of man of frequent changes of apparel, comfortable beds, and hot baths.

Rejuvenation

And it has been hinted by Lord Bacon, that the tradition of Jason being restored to youth by means of the medicated caldron of Medea, was, in fact, an allegorical representation of the effects of the warm bath in retarding the approach of old age. What the bath was to the Greeks, it became also to the Romans.

Amongst the latter people it attained proportions never reached before, nor since, in any country; so that there is probably considerable truth in Mr. Urquhart's observation, that "Rome was indebted to her strigil as well as her sword for the conquest of the world."

Strigil: An instrument like a blunt knife, used by the Romans to scrape off the perspiration induced by the hot bath, much as ostlers scrape the sweat from horses with an iron hook. Specimens may be seen in the British Museum.

In later times, when their habits in other respects were not such as to be conducive to health, the bath served as an antidote to their manner of life.

By keeping the skin free and active, they provided the means of relieving the system from any evil consequences that might result from the excesses in which they indulged. Without any great or exact knowledge of the physiology of man,

both the Romans and the Greeks, as well as other early nations, thoroughly understood the philosophy and appreciated the advantages of bathing.

By its regular and sedulous use they unquestionably aided the development of the physical frame, secured it against the ravages of disease, and so added to the comfort and duration of life.

With the decay of ancient civilization the bath relapsed, more or less, into disuetude; consequently, during the middle ages, dreadful plagues frequently occurred, and decimated entire populations a result attributable, to a large extent, to the lack of that appreciation of the advantages of the bath which had led the enlightened nations we have mentioned to dedicate it to the divinities of medicine, strength, and wisdom.

I am content to state this fact broadly and in general terms. Dr. Lyon Playfair — no mean authority on the subject — boldly asserted in his famous Glasgow speech (5th October 1874), that;

> *"For a thousand years there was not a man or woman in Europe that ever took a bath. No wonder that there came the wondrous epidemics of the middle ages, which cut off ¼ of the population of Europe — the spotted plague, the black death, sweating sickness, and the terrible mental epidemics which followed in their train — the dancing mania, the mewing mania, and the biting mania."*

Any one who is curious in such controversies will find this wholesale charge of uncleanliness against mediaeval Europe met by a spirited reply by a certain Father Bridgett, in the February number of last year's Contemporary Review, under the title of "The Sanctity of Dirt."

This reverend gentleman denies the existence, as an historical fact, of the "dirty millennium" described by Dr. Playfair, and, secondly, defends the Roman Catholic Church from the charge of having forbidden or discouraged baths.

He certainly succeeds in showing that Dr Playfair had been guilty of hyperbole, but he admits the substantial accuracy of the indictment when he distinguishes between the asceties and the seculars, and remarks that the church commended the former for not being too delicate and fastidious.

With regard to "St. Thomas of Canterbury," at the thought of whose underclothing Dr Playfair shudders.

Father Bridgett naively tells us that when those who lived with him found at his martyrdom that his body was covered with a hair shirt, which had remained long unchanged, they were "filled with admiration at the circumstance."

No wonder! The key-note having been struck by Dr. Lyon Playfair, at Glasgow, in October, we find the Echo newspaper a month later (3rd November 1874), chiming in with the Professor, in an article on the "Management of Hospitals," from which I quote the following:

"The monks and hermits and nuns, who presented to mankind in the dark ages the ideal of sanctity combined with dirt, have to answer for the hideous plagues and black deaths which destroyed half the human race in the eleventh and twelfth centuries and for immeasurable woes and sufferings ever since.
When St. Parian solemnly exhorted the early Christians to decline, as unholy and abominable, the heathen proposition of taking a bath, and St. Bernard of Clairvaux, excited the frantic devotion of his followers, by displaying under his robe his scraggy and filthy chest, the fanatics laid the foundation of habits, the fertile parents of diseases destined to torment mankind for centuries — even after Protestantism had once more taught the nations to respect the wondrous structure which composes the human organism."

This neglect is the more wonderful when we consider that immersion in water was used for centuries in one of the ordinances of Christianity.

In modern times, considerable attention has been paid to the subject; but, in the care we bestow upon our bodies, we still fall far short of both the Greeks and the Romans, which is all the more surprising when we consider our extended acquaintance with the bodily organism and its various and complicated functions.

In the evidence given before the Sanitary Commission for Inquiring into the State of Large Towns and Populous Districts, the appointment of which was the first step in the way of sanitary improvement in this country, great stress was laid on the necessity of personal and domestic cleanliness.

Dr. Southwood Smith, who was one of the principal medical men examined, thus expressed himself:

"I have already, more than once, expressed my conviction that the humanizing influence of habits of cleanliness, and of those decent observances which imply self-respect, the best, indeed the only real foundation of respect for others, has never been sufficiently acted upon. A clean, fresh, and well-ordered house exercises over its inmates a moral, no less than a physical, influence, and has a direct tendency to make the members of a family sober, peaceful, and considerate of the feelings and happiness of each other; nor is it difficult to trace a connection between habitual feelings of this sort and the formation of habits of respect for property, for the laws in general, and even for those higher duties and obligations, the observance of which no laws can enforce; whereas, a filthy, squalid, unwholesome dwelling, in which none of the decencies common to society, even in the lowest stage of civilization, are, or can be, observed, tends directly to make every dweller in such a hovel regardless of the feelings and happiness of each other, selfish, and sensual. And the connection is obvious between the constant indulgences of appetites and passions of this class, and the formation of habits of idleness, dishonesty, debauchery, and violence."

The importance of cleanliness in this respect cannot be too highly estimated; nor is it giving expression to a new or doubtful truth to say that physical and moral conditions stand in an unvarying relation to each other, and that to act upon the one you must act upon the other.

Disease is not a visitation of God, but the direct result of a violation of physical laws.

The natural conclusion, therefore, is, that to be free from disease we must become enlightened with reference to those laws,and render implicit obedience to them.

Now there is no one thing more emphatically impressed upon our minds by the facts of physiology than the necessity of corporal cleanliness.

Without this it is impossible to enjoy perfect health.

Among nearly all ancient peoples, who had a knowledge of this great fact, ablution was a religious duty.

In the capital of the Roman Empire, according to Fabrieuis, there were not fewer than 856 public baths, some of which were sufficiently large to contain at once 1,800 persons. These establishments were regulated by the Legislature.

Here, according to the historian of the "Decline and Fall" "the meanest Roman could purchase with a small copper coin the daily enjoyment of a scene of pomp and luxury which might excite the envy of the Kings of Asia."

Our Western civilization, however, amidst its many other anomalies, has until late years almost ignored the bath. We English flatter ourselves we are a clean people, but, judged by the Eastern standard, we are exceedingly dirty.

> *"Cleanliness is a matter of self- examination not of external seeming. You must acquire the ideal standard of cleanliness before you can acquire the habits of that refined people from whom you are endeavouring to adopt this practice."*

It is generally admitted that dirt, disease, and demoralization are natural and ever-recurrent concomitants, therefore I maintain that the use of the bath would prove to the body, what the moral influences of the Bible are to the soul, and their combined action, would be attended with the greatest possible happiness; degradation would be materially arrested.

In a city or neighbourhood where there is a deficiency of baths and other means of personal or domestic cleanliness, and consequently a predominance of dirt and filth, you will be sure to find disease and degradation there rampant.

> *"A large class of crimes, arising from intemperance and the indulgence of vicious propensities, is fostered by the low state of physical comforts, which leads to the use of stimulating drinks, and to other methods of imparting false strength to the reduced system. These act with the greatest intensity on the inhabitants of those places where filth and absence of facilities for its removal depress the energies and engender disease and death."- say the Commissioners in their second report*

I have found that when an intelligent artizan has once become acquainted with the advantages of any of the appliances of civilization, he is not slow to avail himself of their aid; and habits of cleanliness, once formed, quickly effect a transformation in a man's mode of living; his sensibilities become improved to such an extent that he will not live in a room which is unhealthy, or in a house that has bad drains, &c.

The first step towards making a people healthy, is to make them cleanly in their person, or to quote once more from Dr. Playfair;

> *"The sum and substance of all our sanitary science, accumulated by ages, may be summed up in the pregnant advice of the prophet — "wash and be clean." It is the simpleness of a remedy, as a cure for the public ills which so grievously affect us, that prevents its public recognition."*

Simple as it is, however, the remedy cannot be applied unless adequate and comfortable baths and washhouses are supplied within an easy distance and in convenient situations.

The general habits of the poor, their daily occupations, and the nature of their employments, are such as render frequent bathing necessary to the maintenance of health; and unless every possible facility is afforded to this end, they are very liable to become insensible to its importance.

Any obstacles in the way of personal or domestic cleanliness give rise to habits of carelessness and drunkenness, which rapidly lower both the moral and physical condition.

At present, to the great mass of the poor the bath, as a means of comfort, luxury and health, is hardly known even in name, and to this ignorance is due the prevalence of so much disease.

No sane person will dispute the imperative necessity of keeping the cutaneous surface in a perfectly clean condition, as a means of preserving health.

It will be my endeavour to point out the best method of effecting this object, and to impress upon public authorities the desirability of providing adequate and appropriate means for promoting the cleanliness of the people.

Cleanliness is said to be next to godliness; but, like other near neighbours, they are not always found to agree.

The Church Congress has been endeavouring to prove that there is a necessary between religion and sanitary regulations, one clergyman, indeed, affirming that "health of body seemed almost a prerequisite to health of soul," and that "religion and soundness of body were united, as it were, by a marriage bond."

Now this is a beautiful theory, and we would rather overlook historical and existing objections to it.

People say, of course, that if pilgrims had been as cleanly as they were pious, there would have been less cholera in the world; and some folks, looking at the condition of our own cities, hint that certain sections of the population there outrival their neighbours in faith much more than in the purity of their linen.

Perhaps it would be better to admit that cleanliness and godliness are very good things in their own way, without seeking to prove their interdependence.

I cannot conclude this present chapter better than by directing the attention of my readers to the forcible language of that eminent thinker and writer, Professor Alexander Bain:

> *"Next to eating and sleeping, the bath may be ranked among the very foremost of the necessaries and supports of life. It is of far higher consequence, and of more general utility, than any kind of manual exercise, gymnastic or sport. It affects the system more powerfully than these, even in the very points wherein their excellence consists, and it is applicable in a thousand circumstances where they are not. It does not supersede, but it ought to come before, these other practices. A place should be therefore found for the bath among our regular occupations of life; it ought to be a permanent institution, ranking immediately after the prime necessities of our being. Either daily, or several times a week, should every one repair to it, in some shape or other, either at morn, mid-day, or evening, according to strength and leisure. There certainly does not exist a greater device in the art of living, or a greater instrument for securing a vigorous and buoyant existence. It is one of the most powerful diversions to the current of business occupations; it can suspend for a time the pressure of our pursuits and anxieties, and return us fresh for the enjoyment of our other delights. To the 3 varieties of state which our bodies pass daily through — eating, working, sleeping — it would add a fourth, luxurious in itself, and increasing the relish for all the rest. It contributes to realize the perfect definition of a good animal existence, which is, to have the appetite always fresh for whatever is before us. The health of the mind must be based, in the first place, on the health of the body; mental occupation and refined enjoyments turn into gall and bitterness if they are not supported by the freshness and vigour of the physical frame." - Richard Metcalfe, F.S.S in "Sanitas Sanitatum et Omnia Sanitas", Vol. I, 1877.*

"A large number of cases of Ascites (abnormal buildup of fluid in the abdomen) are curable if properly treated. In hysteria and other nervous diseases, accompanied by urine, we can order pure water or whey freely, vasomotor tonics and saline diuretics. In local oedemas similar treatment is applicable, but purgatives are more freely required. In the dropsy attending acute Bright's disease, there is defective elimination of water with consequent hydraemia, the capillaries are overloaded, and the of blood in them is diminished. The quantity of fluid ingested should be regulated by the state of the Emunctories, this form of dropsy the free action of the skin is most important, not so much for removing the dropsy as for relieving the kidneys and getting rid of waste products. The Emunctory function of the skin is great, and offers the best substitute for inactive kidneys. The bowels should be at first well unloaded with a good cholagogue purgative, and afterwards there should be one free evacuation daily. When the inflammation has subsided and the circulation in the kidneys restored, we should encourage the free discharge of urine." - Dr James Barr, MD in "A Discussion On Diuretics", The British Medical Journal, 11 December 1897.

The Byzantine Bath

"It is through the medium of the skin, as an independent organ possessed of great power of elimination, that we must look for the removal of those dropsical accumulations, the result of disorganisation of the kidneys.

And of all means none can surpass or even equal the immersion of the body in heated air, or what is generally termed the "Byzantine Bath".

It is to Mr Urquhart that we are indebted for the introduction of the Byzantine bath into England, and to Erasmus Wilson for forcibly drawing the attention of the profession to the bath as a means of not only promoting a healthy condition of the skin, but of preventing disease, and as an adjuvant in its removal when already established.

It is well known that: **The human body can support a temperature of 149 C and 205 C in dry air; of course vapour is scalding at 49 degrees C, and boiling at 100 degrees C.**

Wilson says: "**Looking at the skin in relation to the other organs of the animal economy, we recognise it as one of the great Emunctories or scavengers of the body; and we may fairly place it by the side of those other great Emunctory organs, the liver and the kidneys, and the lungs.**

To give rest to the kidneys when they are unable to work out their normal functions is a very important matter; and this may readily and safely be done by submitting the body to hot air having a temperature from 55 C to 65 C, thus calling upon the skin to perform not only its own office but that of the kidneys as well.

The less we stimulate the kidneys by diuretics, when they are being structurally broken up by disease, the better chance will there be for the reparative process to go on.

Acting on this principle, Dr Thudichum, who was consulted by a patient of mine who was suffering from a severe attack of Bright's disease, and whose cellular tissues were loaded with serum, suggested that he should take 2 Byzantine baths daily at a temperature of 60 C degrees, and afterwards submit to a cold shower-bath.

The patient was about 58 years of age. The quantity of albumen in his urine was so great that the fluid became nearly solid on the application of heat. He had an intermitting pulse; pain about the loins and heart; his countenance had a peculiar cachectic aspect; and his lower limbs were so swollen as to render it impossible for him to put on his ordinary trousers or boots.

He began taking the Byzantine bath, and derived the greatest benefit from it.

He described the hot air as being very peculiar and distressing, until the skin began to act freely.

After a few baths the skin acted with greater rapidity, and the perspiration ran down the arms in large pearly drops even to the finger-ends: the temperature was most delicious, and the sensation most delightful. **During this dreamy and felicitous state, his troubles all vanished as if by magic.**

So convinced was he of the utility of the Byzantine bath in his complaint, that on his return home he had one constructed on his premises, and every morning with a surprising regularity went into his bath at 6 am, and remained 2 hours; and this he repeated always twice daily for upwards of 4 years, always having a bucketful of cold water thrown over him immediately after the bath.

His dropsical symptoms soon left him, and he became much better in every respect: he was enabled to go about and attend to his ordinary business with comfort. The urine did not lose its albuminous character, and but little was passed from the bladder, in fact, the kidneys were kept in a state of comparative repose, and were not subjected to the wear and tear of their ordinary duty, but were supplanted by that great Emunctory of the body, the skin.

Thus was this man's life prolonged by the daily submitting of the nude body to a temperature of from 55 C to 60 C, producing a forced and increased action of the skin, by means of which a larger quantity of water containing much effete matter in solution escaped.

My experience in the treatment of Bright's disease is, that no medical agent we employ has so great power of arresting the complaint, or of prolonging life, as the Byzantine bath during the progress of this intractable disease of the kidneys." - Dr Edwin Morris, MD, "The British Medical Journal", 25 February 1871.

The Study of Fascia in Emunctology

Definition of Fascia

The Fascia Research Society, founded in 2007. Established the Fascia Nomenclature Committee.

In 2014 the third group of scientists who are involved in giving a definition for fascia, part of the committee gave the following definition of fascia:

> *"The fascial system consists of the three-dimensional continuum of soft, collagen containing, loose and dense fibrous connective tissues that permeate the body. It incorporates elements such as adipose tissue, adventitiae and neurovascular sheaths, aponeuroses, deep and superficial fasciae, epineurium, joint capsules, ligaments, membranes, meninges, myofascial expansions, periostea, retinacula, septa, tendons, visceral fasciae, and all the intramuscular and intermuscular connective tissues including endo-/peri-/epimysium.*
> *The fascial system interpenetrates and surrounds all organs, muscles, bones and nerve fibers, endowing the body with a functional structure, and providing an environment that enables all body systems to operate in an integrated manner." - S. Adstrum, et al., in "Defining the fascial system", J. Bodyw. Mov. Ther., 2017.*

A New Concept of Biotensegrity Incorporating Liquid Tissues: Blood and Lymph

"The definition of fascia includes tissues of mesodermal derivation, considered as specialized connective tissue: blood and lymph.

As water shapes rocks, bodily fluids modify shapes and functions of bodily structures.

Bodily fluids are silent witnesses of the mechanotransductive information, allowing adaptation and life, transporting biochemical and hormonal signals.

While the solid fascial tissue divides, supports, and connects the different parts of the body system, the liquid fascial tissue feeds and transports messages for the solid fascia.

The focus of this article is to reconsider the model of biotensegrity because it does not take into account the liquid fascia, and to try to integrate the fascial continuum with the lymph and the blood in a new model.

The name given to this new model is Rapid Adaptability of Internal Network (RAIN)." - Bordoni B, et al. In "J Evid Based Integr Med.", 2018.

The State of the Emunctory System and its Effects Upon the Nervous System

In Emunctology the Cerebrospinal Nerve System also called Central Nervous System are one and the same. It consists of the brain, spinal cord, and motor and sensory nerves.

"Disorders in the functions of the intestines, may produce in the nervous system a diminution of the functions of the brain, even so as to occasion apoplexy and hemiplegia (paralysis affecting only one half of the body), or a state of excitation causing delirium; partial nervous inactivity and insensibility, or the opposite state of irritation and pain.

It may produce in the muscular system weakness, tremors and palsy; or the contrary affections of spasm and convulsions.

It may excite fever by disturbing the actions of the sanguiferous system, and cause various local diseases by the nervous irritation which it produces, and by the weakness which is consequent on nervous disorder or imperfect chylification.

Affections of all those parts which have a continuity of surface with the intestines, as the stomach, throat, mouth, lips, skin, eyes, nose and ears, may be caused or aggravated by this complaint." - Dr Abernethy, MD in "On the Constitutional Origin, and Treatment of local Diseases", p. 70., 1814.

"The deterioration or depravation of the senses often originates in the same cause and demands the same treatment. I shall cite amaurosis (blindness produced by paralysis of the retina or optic nerve); deafness, of which the source was pointed out even by Hippocrates; and an analogous affection of the sense of feeling, which I have seen quickly yield on the employment of suitable evacuants. Nervous disorders are most commonly derived in my opinion from the digestive system. Spasmodic neuroses recognize the same origin and power of a similar treatment. Dr. Hamilton makes us see what benefits can be derived from it in chorea and hysteria practitioner and others no less commendable bring us to believe that tetanus is caused by the disorder of digestive organs and that only by the judicious use of purgatives can hope to heal and prevent this terrible disease. It is certain that epilepsy very often comes from this cause at all the times of life, and then easily submit to these means. But experience also teaches us that when it is inveterate and rebellious, whatever the cause, this condition is successfully attacked the same way." (Hallé, Mémoire – Dumas, Maladies Chroniques)". - Dr Francis Hopkins, MD in "Considérations Générales Sur l'Utilité des Purgatifs", 1823.

Diet: A Causation Factor in Nerve Disease

"The diet is one of the most frequent, and real sources of nerve diseases.

In order to appreciate the action, it is important to examine the substances ingested, in terms of both quality and quantity.

The influence of certain organs on the production of nervous states, reminds the opinion of Trousseau and Pidoux, in their "Therapeutic Treatise, and of Medical Matter," Tom. I, p. 92, Paris, 1836.

These authors, think that essential spasms have the same starting point, as do instinctive acts, namely: the different viscera or organs.

They see, in this character, a valuable means of diagnosis and a criterium principal of curative indications.

We know that the use of certain antispasmodic substances that may be called specific, act upon the organs which, by carrying out their action on or such part, put an end to general nervous symptoms.

This consideration has not escaped the observers. Those who took special care of nervous diseases, have noticed that in a large number of cases, we must relate to the erethism (abnormal high degree of irritability or sensitivity of a part) all the symptoms of a general affection. Whyte had observed that hypochondriac nerve disorder was most often under the influence of excess sensitivity stomach or intestines. We know today what to think of the so-called chronic gastritis, that essentially disposed to nervous affections." - Dr Aime Audubert, MD in "Considérations Générales sur l'état Nerveux", 1840.

The Relation of Light to the Nervous System

When dealing with nervous conditions, the Emunctologist should bear in mind the effect of Sun Light upon the Nervous System.

Animal and plant life in their actual forms, would not be possible without light. It is known that light exerts a direct influence upon the functioning of the sensory system.

There is no functioning of any portion of the system which functions through the nervous system not affected by rays of light, life itself in manifested form, is vibration, of which light is a part.

The Emunctologist, must study and bear in mind the Therapeutic Value of Sun Light, and in special that part of the electromagnetic spectrum of which the Ultraviolet Rays compose same.

"The skin is very elastic; capable, indeed, of immense distension, as is frequently seen in dropsical effusions. It is sensitive, protective, secretory, and Emunctory. Being the external covering of the body, it is at once manifest that it is exposed to many vicissitudes from external causes, and must be endowed
with inherent properties, without which, the body, generally, would sustain many rude shocks. The skin is one of the great Emunctories of the body, and upon its office being properly and duly performed, depends much functional integrity. There is a certain but varying amount of cutaneous exhalation, called, in ordinary parlance, insensible perspiration, constantly going on; ***and any cause, operating to prevent the due performance of this necessary function, throws back an amount of secretion usually got rid of by this source, upon some distant and internal organ, which may, and often does, in consequence, become congested and inflamed."*** *- G. B. Barron, Surgeon, in "Southport, as a residence in health & disease", 1858.*

Chapter 15

The Colon

*"Even more, **I think it's easy to show that it's these last ones (the purgatives) that essentially make the basis of truly healing methods in most chronic diseases."** - Dr. Halle, MD in "Memoires de la Societe Royale de Medecine de Paris", 1786.*

"By correcting the obvious errors in the state of the digestive organs (intestines), local diseases, which had baffled all attempts at cure by local means, have speedily been removed, and the patient has acknowledged that such an alteration has taken place in his general health, as greatly excited his surprise. All the experience I had about tetanus, since the first publication of these observations convinced me that more more by correcting the disorders of the digestive organs than by any other way." - Dr Abernethy, MD in "On the Constitutional Origin and Treatment of local Diseases", 1814.

"The only medicamental treatment of a rational nature, is that which is applied to the digestive tube." - Dr Antoine Signoret, MD in "Considérations Générales sur l'état de la Médecine", 1838.

"In the course of every disease, whether acute or chronic, practitioners of all ages have agreed in considering as an essential condition in the treatment, the care of maintaining the free action of the intestines." - Dr. Requin, MD in "These pour le Concours de Matiere Medicale et de Therapeutique", 1839.

"The colon is one of the enigmas of medicine and, to cover the subject in a complete way, would require a book." - Dr Frank Anthony Cummings, MD in "The Colon as a Focus of Infection", The Rhode Island Medical Journal, 1934.

"Abnormal functioning of the intestinal canal is the precursor of much ill-health, especially of chronic disease. Restoration of physiological intestinal elimination is often the important preliminary to eventual restoration of health in general." - Dr. Joseph E. G. Waddington in "Scientific Intestinal Irrigation and Adjuvant Therapy", 1940.

"The colon is a source of several gastrointestinal hormones, including serotonin, vasoactive intestinal polypeptide (VIP), glucagon, and somatostatin." - in "Colon, Structure and Function", 1983.

"Gastrointestinal Hormones, such as: gastrin, cholecystokinin, and secretin, have widespread effects on gastric acid production, pancreatic and biliary secretion, and mucosal growth." - in "Ontogeny of the Immune System of the Gut", 1990.

The Bowels

"Clinically, this function most often commands our attention.
Constipation underlies the majority of cases met by the general practitioner.
Nearly all fevers are preceded by an Auto-Toxemia.
Early attention would have set the patient aright.
Constipation is often super-induced by a perverted function of some of the organs of digestion. The liver is the great scapegoat and often it is at fault." - Dr W. T. Mares, MD in "The Medical Brief", 1905.

The Function of the Colon

"The function of the colon is to store for several hours the unabsorbed dietary residues together with an abundant colonic flora and intestinal secretions. Some of this intestinal content is absorbed, and the rest is eliminated without discomfort for the host. The upsets that the absence of this subtle evacuation mechanism entail for ileostomized patients are well known. Kerlin and Phillips report that the colon is capable of absorbing up to 5 liters of water daily, as long as the inflow rate is kept constant and does not overwhelm the absorptive capacity of the organ.

This water recovery ability of the large bowel explains why in some cases removal of the organ can result in an excessive loss of water and the ensuing dehydration of the patient.

As sodium and chloride are absorbed in the colon against concentration gradients, it may be presumed that the organ is actively involved in the conservation of these ions and that patients face a higher electrolyte descompensation risk after the colon has been removed. It has been shown that short-chain fatty acids (propionate, acetate, and butyrate) can be absorbed from the colon. Soergel has estimated that the human colon can absorb approximately 500 kcal/ day in the form of short-chain fatty acids.

According to Polak, 4 peptides are present in the colon in significant quantities: Vasoactive Intestinal Polypeptide (VIP), substance P, enteroglucagon, and somatostatine. Other peptides, such as enkephalins, bombesin, Cholecystokinin (CCK), and gastrin-like peptide, are also present in the colon. VIP and substance P are found mainly in the autonomic nerves, enteroglucagon and somatostatine in the mucous cells. Although these neuropeptides present in the colon may play a role in control mechanisms of the organ's own functions, it may be supposed that some of them are possibly involved in the activities of the other alimentary canal organs or in tissue outside the gastrointestinal tract." - Dr Luis Bustos-Fernández, MD, in "Colon, Structure and Function", 1983.

Alimentary Tract be Regarded as a Whole

"It is important, as Lane and Jordan have so often repeated, that the alimentary tract be regarded as a whole, that its diseases should not be regarded as "isolated phenomena", but that local manifestations along its course and in accessory organs be regarded as expressions of a general disorder.

As we all know Lane maintains that many diseases, such as gastric ulcer, cancer, gall-stones, rheumatoid arthritis, and others, are the remote results of chronic intestinal stasis.

According to Jordan, "the general disease at the bottom of the case can always be revealed by a complete radiological investigation of the alimentary system", and it is just this contention which, it seems to me, should stimulate radiologists to make careful and painstaking investigations along the lines laid down by Lane and Jordan.

"In commencing the investigation", he continues, "we gain an important clue at the first examination when we observe the duodenum.

This is without doubt, the most sensitive part of the alimentary tract; even the early stages of intestinal stasis produce their inevitable effect upon the duodenum which becomes distended from obstruction (by kinking) at the commencement of the jejunum." - Dr William Seaman Bainbridge, Sc.D., MD, Professor of Surgery, New York Polyclinic Medical School and Hospital in "Eleven cases roentgenographic and operative findings Chronic Intestinal Stasis", The American Journal of Roentgenology, September, 1914.

Failure to Influence Infection in the Colon

"Neither vaccines (enemas), nor other means of increasing tissue resistance could possibly influence bacteria within the caecum. It was then that I began to realize that **the First Principle in the Treatment of Chronic Infection was really: Drainage**; and that the use of vaccines for the purpose of increasing immunity must take a second and limited place.

Bacterial Allergy

I also realized that much of the value of specific vaccines in chronic infection resided in their power of specific desensitization of the tissues to bacterial allergy, for another fact became evident, and that was that allergy is one of the most common factors making for chronicity. **According to the location of the sensitive tissues, such diseases as Arthritis, Asthma, Colitis, Migraine, Eczema, Hypertension, Spasticity, etc..., are produced.**

Toxins and bacteria entering the portal circulation from the colon add tremendously to the burden already on the liver, enhancing thereby the pollution not only of the general circulation, but of the biliary system as well.

Thus the second circle is completed.

The lymphatic drainage from the ileum and colon to the receptaculum chyli, thence to the left subclavian vein, becomes a third; and as the liver becomes damaged and congested with resultant stasis and hypertension of the portal circulation, we have a fourth, by the way of the haemorrhoidal anastomosis to the internal iliac veins and inferior vena cava.

It must be evident that no matter how or where a chronic low-grade infection originates, the whole body ultimately becomes involved.

Results of Colon Irrigation

Drainage is more important in Colon Therapy than the building up of immunity.

These convictions led me to study the existing techniques used in irrigating the colon. Since I believed that the whole colon, was involved.

In all chronic toxaemias and infections, I now proceed on the assumption that the colon is invariably involved, and treat it regardless of the presence of other foci.

In actual practice I have demonstrated, that it is better practice to treat the colon before attempting the removal of other known foci, since many of these will clear up spontaneously, as soon as the colon is functioning normally.

Furthermore, convalescence will be much less stormy, and there will be a minimum of complications." - Dr James W. Wiltsie, MD in "Chronic Intestinal Toxemia and its Treatment", 1938.

Lane's kink

"The membrane causing Lane's kink is a narrow band extending from the peritoneum of the right iliac region to a point on the terminal ileum, usually within a few inches of the ileocaecal valve.

This band is attached to the under surface of the mesentery and to the wall of the ileum as far as its anti-mesenteric border. Not infrequently, the appendix is adherent to the under surface of the mesentery and from its point of attachment numerous thread-like bands extend to the wall of the ileum. In such cases there may be no sign of any inflammation of the appendix, past or present.

The most common effects of these membranes and bands is to produce a kinking or angulation at two points, namely, at the hepatic flexure and in the last few inches of the ileum. Such angulation causes a partial obstruction, intestinal stasis, and occasional spasmodic efforts on the part of the intestine to overcome the obstruction.

Lane, Gray, Fagge and others, in England, and Bainbridge, in this country, describe membranes attached to the splenic flexure and sigmoid in addition to those attached to the hepatic flexure, ascending colon and terminal ileum.

What then are the symptoms that will lead us to a diagnosis of Jackson's membrane or Lane's kink? Briefly, they are symptoms of obstruction and of stasis, the latter evidenced by the symptoms of intestinal auto-intoxication.

The symptom most frequently complained of is pain. The pain may be acute or it may be chronic with exacerbations, and it is almost always referred to the right side of the abdomen. The pain is usually most marked in the region of the appendix (terminal ileum) or at the hepatic flexure. There may be acute attacks of abdominal pain, with or without vomiting, but in such cases the pain is never referred to the epigastrium or diffused over the entire abdomen as is the case with appendicitis.

It is in no case a general pain, becoming local, but is commonly referred to some definite locality, in the right side of the abdomen, most commonly the right iliac region. Less frequently the pain is referred to the region of the hepatic flexure, but in such cases has none of the characteristics of gall-bladder pain with which it might be confused. In some cases the pain is a chronic soreness with feeling of distention, and in many such cases pressure over the caecum and ascending colon seems to give relief. In a few cases pain is not localized. Tenderness is even more strictly localized than the pain.

Very commonly this tenderness is most marked at the usual site of appendix tenderness, but perhaps a little lower down. In other cases the maximum tenderness is in the region of the hepatic flexure, that is, below the ribs on the right side but further out than the common site of gall-bladder tenderness.

In many cases there is a feeling of distention by gas. One patient complained of even the weight of his undershirt. These attacks of pain and tenderness are not accompanied by a rise of temperature or an increase in the number of the leucocytes, which further differentiates the condition from an acute inflammation.

Constipation is a marked feature of practically all these cases. It may be moderate or it may be extreme. It may be the chief complaint, or it may not have especially attracted the patient's attention.

Auto-intoxication is a prominent feature of a majority of the cases. In addition to abdominal pain, tenderness, and constipation, these patients complain of backache, headache, lassitude and a general sense of ill-being. The complexion is sallow, muddy and, occasionally, spotted. There are rings beneath the eyes, and the hands are cold and clammy.

The appetite may be disturbed, and the patient complains that whatever he does is only accomplished with the greatest effort. Such patients are evidently carrying a heavy load, and they finally drift into a neurasthenic state with an unlimited number of complaints of pain and of aches, of lassitude and of malaise.

In some cases the symptoms of Auto-Intoxication entirely overshadow the symptoms of pain and tenderness, and constipation and it is only by careful questioning, and examination that the latter points are brought out.

By diet, massage, and purgatives, the symptoms in some cases may be held in abeyance. The surgical treatment consists of a free abdominal incision through the right rectus muscle, a careful exploration of the regions of the terminal ileum and

of the hepatic flexure, division of all restricting bands and membranes and a covering in of all raw surfaces when such result. This may usually be easily accomplished by dividing the restricting membrane transversely and uniting the margin of the denuded area longitudinally.

In some cases division of the membrane leaves no denuded area, consequently plastic approximation of peritoneum is unnecessary.

In those cases in which the caecum is dilated and unduly movable, a plication of the walls of the caecum at the "caput coli" may be done, and the movable caecum may be fastened to the posterolateral wall of the abdomen." - R. Bland Williams in "Pericolic Membranes and Lane's Kink", Annals of Surgery, January 1914.

The Colon and Colitis

"The importance of the colon is borne in upon us by the recurring experience of our daily lives. On its periodic functioning depend our health, comfort, mental alertness and emotional outlook to a greater degree than we care to confess.

Who is more of a misanthrope than the subject of the loaded colon? Optimism and pessimism in outlook may be decided by the state of the colon, good temper or bad temper, sunshine or cloud in the domestic circle. Recall, too, the contrast between the clear skin and pinkness of complexion on the one hand and the muddy skin and sallow mien on the other hand, the former associated with the functioning and the latter with the non-functioning colon.

Another fact worthy of note is the extraordinary rapidity with which unloading of the lower bowel is followed by relief of general abdominal discomforts and the re-establishment of a sense of well-being.

This responsiveness, this influence for weal or woe, presents the colon to our minds as an organ with a highly developed functional activity closely linked up not only with other portions of the alimentary tract, but with the higher nervous centres. They do not suggest the colon as playing a mere mechanical part, or as a structure of declining importance, a fading evolutionary remnant, to be lightly cast aside as of doubtful utility to its owner.

When we contemplate the many and rapidly changing demands which modern life makes on our digestive system, and side by side with this the exceeding slowness with which adaptive changes in structure evolve, it is small wonder that there is an increasing strain on functional efficiency and that function gives out.

This tax on function is in some measure due to the food we eat and the way we eat it. There is a group of people whose abdomens are over-responsive to nerve impressions. Fatigue, fear, anxiety, intensive endeavour, manifest themselves in their hollow viscera, and, it may be, through the agency of internal secretions. So do reflex disturbances.

In some, it may be, the stomach is irritable and hypertonic, and secretes too much hydrochloric acid: such are prone to duodenal ulcer. Whereas in others the distal colon is irritable and hypertonic, and has its secretion disturbed: such are prone to colitis.

In both of these examples the prime cause of disease is disordered function.

But let such patients take comfort, strain on hollow viscera makes itself manifest and gives warning, and if disease shall follow, such disease is curable.

Granted that disease is the interaction between a morbid process and the individual, it is clear that where the individual and his life are primitive, disease is simpler and more constant in its manifestations.

By colitis I mean so-called mucous colitis, and exclude all cases where mucus in the stools is associated with organic disease of the colon, such as new growth, and the various forms of ulcerative colitis.

Next, as to the term colitis: if the condition is primarily due to disordered function and inflammation is only an added and not a constant feature, and if the disturbance is not limited to the colon, it might be objected that colitis is a misleading name for the condition. No name, however, has been suggested to take its place, and for complex clinical conditions comprehensive titles are difficult to devise, and we often have to be content with convenient labels. Meanwhile, "colitis" has the advantages of usage, brevity, and therefore of convenience.

The Clinical Picture of Colitis

The colonic manifestations are abdominal discomfort or pain, disturbance of the function of the colon as shown by irregularity in its evacuation and alteration of its contents, including the expulsion of mucus, and sometimes of blood or sand.

By variation in their severity, by the ease with which they are provoked and the frequency of their occurrence, the foregoing features produce varying clinical pictures.

Thus pain may be acute or paroxysmal, or dull and aching, or, again, there may be a constant sense of abdominal discomfort and misery. Tenderness may be local, general, or absent. Mucus may be passed in casts, as lumps or in stringy form.

In some cases the disease comes on in attacks and at long intervals, and the patient is quite well between whiles; in other instances the intervals of immunity are short and even incomplete, and, it may be, to such an extent that the patient is chronically ill and liable to exacerbations of symptoms on the slightest provocation?

The descending colon will be felt to be tightly contracted, and sometimes in addition the caecum toneless and distended. Infection does, in some instances, contribute to the picture, just as it is liable to follow disturbances of function in the urinary and biliary tracts.

Such infection may be related to tonsils, gums, stomach, or appendix.

The appendix is seldom the focus of infection; more often it shares an infective process on equal terms with the colon; hence the results of its removal for colitis are commonly disappointing. Radiography shows the distal colon to be tonically contracted and irregularly segmented. Side by side with this may be disclosed varying degrees of delay, it may be in the caecum, colon, in the lower ileum, in the second part of the duodenum.

Further there may be displacements of the hollow viscera, such as a prolapsed caecum and the familiar festooned transverse colon, or again, a movable ascending colon, hairpin bends, and kinks.

With our greater familiarity with x-ray appearances in all varieties of cases we know how commonly anatomical irregularities can exist with bowels that function normally.

When we recall how coils of intestine kinked and tethered by old adhesions can exist, and acute bends of the bowel be produced experimentally, without causing stasis, we are led to conclude that, provided the musculature of the bowel is efficient, these anatomical irregularities need not count for much, and especially in those portions of the bowel where the contents are fluid. In specimens examined by Keith the lumen of the bowel was not encroached upon, and the coils above kinks were not hypertrophied. On the other hand, delay can exist without the presence of any anatomical abnormality.

The holding up of the contents of the lower ileum by the ileo-colic sphincter is a part of normal digestion and hypertonicity of that sphincter will produce ileal stasis. In the same way tonic contractions of the descending colon will produce delay in the proximal colon. In short, the immediate cause of stasis lies in the intestinal wall. It is the musculature and its nerve innervation which count, and it is only seldom that anatomical irregularities play an important part.

The importance of this question is great because its rightful determination is necessary to sound treatment. **It is of small benefit to perform ingenious operations to replace or fix viscera unless these anatomical variations are causing the symptoms which are in need of relief.**

That such variations do occasionally cause ill health is undoubted, but their mere existence in conjunction with symptoms difficult of explanation is no proof that they have a causal relation to these symptoms. It is interesting to note how such fixing operations live each its short day, and pass into comparative disuse.

The Involvement of the Alimentary Tract

The colon is not the only part affected. There are commonly symptoms referable to other parts of the alimentary tract.

Thus pain occurs in the epigastrium soon after food, or, again, 2 hours after eating and relieved by food, so that in making a diagnosis the possible presence of gastric or duodenal ulcer has to be passed under review.

Cardiospasm, gastric distension, and flatulence may also be features, and the incidence of these symptoms bears relation to those more strictly belonging to the lower bowel.

Thus the onset of the typical spasmodic contraction of the descending colon and increase in mucus will go hand in hand with gastro duodenal symptoms.

Again, an acute attack will sometimes begin quite definitely in the upper alimentary tract. Such a patient may be tolerably well, when from a slight or unperceived cause there will be an unpleasant taste, a furred tongue, perhaps a

red pharynx and epigastric pain, nausea, and distension. The onset of the attack is sometimes suggestive of "protein shock."

Such a patient will know by experience that in a few hours his colon will be painful, his stools abnormal, containing perhaps much undigested food and mucus.

In other words, the mucous colitis is the final expression of an attack which has swept along the alimentary tract. On such a patient I have had appendi-costomy performed.

The attacks continued afterwards, but if soon after the onset of the symptoms the patient washed out the colon through the opening the pain in the colon and the passing of mucus would be largely prevented.

The washings consisted of undigested food, so the stomach and small intestine were clearly in fault.

Sometimes the order is reversed, and the colon manifestations are followed by gastric symptoms.

A colonic dyspepsia is as much a reality as appendicular dyspepsia.

The foregoing observations — and I have notes of many such cases — point to the dose inter-relationship of function that exists between the various parts of the alimentary tract.

The latter is a finely balanced bit of mechanism, derange one part and the other parts suffer.

Colitis, then, is one phase of a disturbed digestion in which stomach, duodenum, intestine, pancreas may all play a part. Side by side with stress and strain which impair function we find foods and methods of feeding which at the same time overtax it.

Whereas the conditions of modern life often require special care in the choice of food, in actual fact the food of the people is in many respects open to more criticism than in former days.

The foods that have become popular are not always the best foods.

White bread, margarine, the boiling of milk, and the freezing of meat, mean deprivation of those accessory factors which give living power to the food we eat.

And vitamin deficiency means not only impaired metabolism, but appears moreover directly to damage digestive function itself. Infection no doubt at a later stage may play an important part, but only gets foothold because the resistance of the tissues has been lowered by damaged function.

The well-known features which the term "alimentary toxaemia", comprises; the sallow dirty complexion, the inelastic and pigmented skin, the "unclean" feeling of month and stomach, the dusky lips, the sad eve, the cold extremities, the depressed physical vitality, and the oppressed mind, go far to give character to any given case of colitis.

The measure of toxaemia is variable, being sometimes almost wholly absent, and at other times dominating the picture. **Its association with fibrositis and arthritis is well established.**

The Over-Responsive Abdomen

The feature which is noticeable with a large number of patients is the over-responsiveness of the abdomen to nerve impressions. They have "barometric abdomens." Fatigue, fear, anxiety, mental stress and strain manifest themselves in their hollow viscera. So do reflex disturbances.

Women suffering from the disease often have pelvic disorders which aggravate the intestinal symptoms, and especially during menstruation. Or let these patients have cold extremities (and they often have poor peripheral circulation), especially when they are fatigued, or, again, let them eat when they are cold, and an attack of colitis may easily follow.

So much is this the tendency that in dealing with these patients it is part of my routine directions to them never to cat with cold hands and feet, and when they are tired to keep their extremities warm. The effect will sometimes follow the cause with amazing quickness—such quickness as would not give time for any inflammation to develop.

I suggest it is rather that reflex nerve disturbance or central nerve disturbance, acting or over-responsive hollow viscera, puts function out of action, certainly motor function, and probably secretory and excretory function also.

The rhythm of the intestine becomes disturbed. It is the difference between the regular and the irregular heart, between perhaps normal muscular contraction and auricular fibrillation.

Since each zone of the alimentary tract influences the efficiency of the zone below and perhaps above it, if one zone be disturbed the other zones suffer, and thus the orderly sequence of digestion is deranged.

Given failure in the function of movement, in the function of secretion (internal and external), and the consequent irregularities of putrefaction and deranged absorption, and "colitis" receives a large measure of explanation.

This over-responsiveness of the abdomen varies in degree. With precautions learned of experience it may, ordinarily, cause little trouble, but should untoward circumstances like over-fatigue, anxiety, bad feeding, occurs the colitis symptom-complex may result. But there are some people whose nervous system is cut so fine that the ordinary rough-and-tumble of life is too much for them and thus are explained some of those examples of intestinal invalids who are never well, and in whom chronic ailing is only varied by recurrent phases of acute symptoms. Such patients are not "neurotic."

To call them so is a misuse of the term; they may, on the contrary, be heroic, working and even smiling in spite of the load they have to carry whether they become neurotic will depend largely on the considerations set forth in the following paragraph.

The Conscious Abdomen

If a gastro-intestinal tract is constantly causing aches, pains and discomforts, it gets raised in consciousness, with the result that slighter and slighter disturbances and even its very doings produce impressions and discomforts instead of remaining unperceived. We thus get built on the basis of physical disease a superstructure of symptoms and distresses which flourish on themselves and tend to grow apace.

There is thus a liability of a conscious abdomen being added to a responsive abdomen, or in other words, of a state of mind being added to a state of body.

The degree to which this happens in large measure explains the many varieties and intensities of symptoms occurring in patients who suffer from colitis; and here come in the temperament and character and training of the patient.

The buoyant, cheerful temperament with a sense of humour will come off better than the inelastic and sombre temperament.

A subject which is introspective and self-centred may be enslaved by the disease, whereas if the subject has the power of sympathetic interest in people and things, can control the mind, and has courage to work, he can, in spite of a colon which is a constant trial, live a tolerably useful life by keeping clear of the worst evils which accrue from the conscious abdomen.

The so-called "neurotic" group consists of those who have developed from their colitis the "conscious abdomen" and have introspective minds.

To be neurotic is no essential part of colitis, though it is small wonder that many of the patients become so. It remains, however, a secondary incident, not an essential feature of the disease. How damaging the "conscious abdomen" can become is illustrated by that well-known type of patient who becomes so analytical of the feelings, doings, and contents of his colon as gradually to abandon aught else and live for his lower bowel.

This consideration of the "conscious abdomen" prompts me to suggest that the profession needs to take up in a large- minded spirit the question of psychical treatment. The patient with colitis who is in danger of being crushed by his illness is not helped by being dubbed "neurotic."

Often his physician can help him most by explaining his symptoms, by discriminating between those which have a physical basis and those which are nervous superstructure, those which threaten health and those which only threaten comfort, and in this way restore his perspective.

The truth is often more helpful than drugs. The patient's mind can be trained and helped to detach itself, to control what it contemplates, to temper rather than reinforce in consciousness the aches and ills of the body, and thus establish the benign rather than the vicious circle.

Such guidance is often given to patients by doctors with the requisite insight and grip, but it is a question whether in this world of hurry more method and system are not needed for this treatment, and there is surely room for those who possess the requisite gifts (and they are rare gifts) to be suitably trained.

It is a branch of therapeutics which needs the guidance and restraint of the medical profession. Without such guidance it gathers to itself vanities and pretences which obscure its truth and discredit its usefulness.

The myenteric plexus (Auerbach's) possesses special features. In addition to ganglion cells and a network of fine fibres, it contains intermediate cells (nodal tissue) which connect the processes of ganglion cells with muscle cells.

The development of the myenteric plexus varies in different parts of the alimentary tract.

Thus it is found in greater abundance in the pyloric region and the lesser curvature than in the body of the stomach; in greater abundance in the second part of the duodenum than in the first and third parts; and again, more richly in the distal half of the transverse colon and the descending colon than in the caecum and ascending colon.

Further, there are localized concentrations of the nodal tissue, "nodal centres" at the ileo colic junction and at the pyloric and cardiac orifices of the stomach.

This nodal tissue has the power of initiating contractile movement. It is the pacemaker of the intestines. The gastro-intestinal tract has been found to be divided into zones: gastric, duodenal, jejuno-iliac, proximal colic, and distal colic.

Each of these zones has its own rhythm determined by its own nodal tissue. Where one zone joins the next there is a check or resistance to the peristaltic waves, and where there is a sphincter — for example, at the pylorus or ileo-caecal valve — the check is complete and the peristaltic wave comes to a stop.

The rhythm of one zone is closely connected with that of the zones below and above it. The myenteric plexus, in addition to initiating contractility, has also a conducting function, for through it efferent impulses along the vagi and sympathetic nerves are conveyed to the intestinal wall.

Professor Keith aptly compares the nervous mechanism of the alimentary tract to that of the heart.

We are well acquainted with tachycardia, irregularity of rhythm, fibrillation, heart-block, and the responsiveness of heart action to extrinsic impulses.

Why should not corresponding irregularities occur in the alimentary tract?

And if to disturbed motor function we add the supposition of disturbed secretion and the effect of both of these on the intestinal contents, I suggest the clinical phenomena of colitis receive a considerable measure of explanation.

Stasis, though not a necessary, is quite a common feature of colitis.

The 2 conditions often present one and the same clinical picture, and in their pathological findings there is a close resemblance.

They are variants of the same morbid state and the same case may be styled colitis by one observer and intestinal stasis by another.

Alimentary Toxaemia

We may reasonably suppose that a high content of waste products and a damaged intestinal wall are the conditions which favour the passage of toxic

products. And these are the conditions which exist in the largo intestine in colitis, and sometimes also in the lower ileum. Stasis is not a necessary factor, for in ulcerative conditions of the colon associated with diarrhoea alimentary toxaemia may be a marked feature. Again, strong purgatives, by irritating the intestinal wall, may aggravate rather than allay an existing toxaemia.

In colitis there is a retention of contents in the recesses of the colon even when the bowels are open; the latter, in short, do not sweep clean.

The degree of toxaemia would depend on the nature of the contents which the colon receives from the ileum, the length of stay of such contents in the colon, and the measure of weakness of the colon defences.

But in cases of colitis and stasis the colon and ileum are not solely responsible for alimentary toxaemia; for the latter will sometimes persist after ileo-sigmoidostomy and colectomy.

Graham Brown has described an amine "p-hydroxy-phenyl-ethylamine" (tyramine) which is formed in the intestine under conditions of stasis by the putrefactive destruction of proteins through the action of anaerobic bacteria.

This toxin is converted in the liver into p-hydroxy-phenylacetic acid, and as such can be found in the urine in cases of alimentary toxaemia. It acts on the sympathetic, producing hypertonus. Thus, even when the damaged colon is put out of harm's way and prompt evacuation is secured, toxaemia may persist. This means there is a second line of defence - namely, the liver, and that this line may also fail. The colon and liver would thus seem to have a joint responsibility.

In some cases the colon defences may have failed so badly that the flood of toxic products is more than even a normal liver can cope with.

It is known that in health during two hours after digestion of a mixed meal unaltered proteins, as well as peptones and amines, pass from the intestine into the portal vein, and that such foreign proteins do not pass the liver defences.

If, however, the liver defences are insufficient, such products get through.

Is it not likely that the same happens in toxaemia?

In abdominal migraine there is a marked toxaemia which is best explained by supposing that the liver defences are temporarily out of action, and Widal, Abrami, Brissaud and other writers set forth reasons for supposing that migraine is the result of anaphylactic shock.

A study of the familiar condition loosely called "chill on the liver" shows a close similarity to the symptoms sometimes produced by a second injection of a horse serum—namely, fever, headache, generalized pains, aching joints, anorexia, nausea, vomiting, etc. Is it not possible that certain attacks of colitis which sometimes light up quickly and without apparent cause may have an anaphylactic (severe allergic reaction) origin?

The following case is worth mentioning in this connexion. A patient liable to colitis always has cold reddish hands; at times her hands become blue, and patches resembling angioneurotic oedema rapidly appear on them. This is usually, in the patient's experience, an immediate precursor of an attack of colitis.

This reminds one of the anaphylactic origin of asthma, between which and

colitis, as Hurst has pointed out, there are many suggestive parallels - the over-responsiveness of the patient, the spasmodic contraction, the excess of mucus, the liability of an inflammatory factor to supervene in the shape of bronchitis. In its late stages the lung of the asthmatic is inelastic and undergoes atrophic and fibrotic changes similar to those found in the colon in the later stages of colitis.

Treatment

The food should consist of light solids. And, generally, colitis patients do better by taking only two main articles of food (courses) at a meal. It is important for the extremities to be warm, and especially before eating.

If the body or mind has been engaged in effort, a few moments of repose and relaxation should precede the taking of food.

An essential indication is to secure the emptying and cleanness of the colon. This is secured by intestinal lavage." - Lord Dawson of Penn, FRCP, Physician in Ordinary to H.M. The King, in "The British Medical Journal", 9 July 1921.

"The direct quantitative determinations of the faecal bacteria furnish evidence of the extent and nature of the bacterial growth in the intestine. This seems to be a delicate index of intestinal conditions." *- in "The Fecal Bacteria of Healthy Men, Part I, Introduction and Direct Quantitative Observations", The Journal of Infectious Diseases, 1 April 1909.*

Colon As Site of Focal Infection in Chronic Pyelitis, Cystitis and Prostatitis

"1. Intestinal autointoxication is a definite entity and must be coped with in many cases of stubborn constipation and intestinal stasis.

2. The colon is a site of focal infection and has a direct bearing on cases of acute and chronic nongonorrheal infections of the genito-urinary tract.

3. In such cases of colonic focal infection, this condition has to be eradicated, preferably by methods to change the intestinal flora in order to subdue or eradicate the offending pathologic organism, before the genito-urinary infections can be definitely cleared up.

4. The intestinal flora can be changed to a physiologic bacterial count by:

a. Regulating the diet in the individual case,

b. Administering viable potent cultures of acidophilus milk by mouth for from 3 to 6 weeks,

c. Implantation of colon bacilli by rectum, following

d. Colonic Irrigations

5. A more definite and fuller cooperation should exist between the urologist and the gastro-enterologist in order to cope thoroughly with any nongonorrheal genitourinary infections that may probably have their origin in the colon as the defisite site of focal infection." - Dr F. H. Redewill, MD, Dr J. E. Potter, MD Lieutenant Commander, Medical Corps, U.S. Navy, Dr Harry A. Garrison, MD Captain, Medical Corps, U.S. Navy Washingon, D.C., in "JAMA", 8 March 1930.

Carcinoma of the Colon and Rectum

"Lesions in the caecum and ascending colon also possess the helpful feature of being readily palpable.

The fact that the function of the distal colon is largely one of storage, and that its contents are largely solid in character and so unfavourable for the growth of organisms and production of toxins, and that little absorption occurs here, makes secondary anaemia less severe and mechanical obstruction more common as an indication of the presence of a carcinoma of the colon at this level.

The symptoms therefore of carcinoma of the distal colon are those of obstruction grading from acute and complete obstruction down to mild and indefinite discomfort, dependent upon the varying degrees of narrowing producing them. Lesions of the rectum tend to be quite silent early in their existence. The appearance of blood and the presence of haemorrhoids.

In a series of 100 consecutive cases of carcinoma of the colon and rectum investigated as to symptomatology: Diarrhoea and constipation occur more frequently than any other symptoms, since disturbance of colonic function must of necessity be more common than any other symptoms.

In this series, constipation occurred in 56% of the patients who had carcinoma of the caecum and rectum, and in 65% of the patients having carcinoma of the sigmoid. There was no disturbance in bowel function in only 9% of the 100 cases.

27% complained of diarrhoea, half of these having carcinoma of the rectum.

The textbook feature, alternating diarrhoea and constipation, which is supposed to be typical of carcinoma of the colon, was present in only 8% of the cases.

Nausea and vomiting occur chiefly in those cases with obstruction and were present in this series in but 13% the cases. Weight loss was present in 65% of our cases." - Dr Frank H. Lahey, MD, FACS, "The American Journal of Surgery", October 1933.

The Colon is the Main Organ of Elimination

The daily bowel movements of the alimentary canal, along with the cleansing of the colon, are to allow, the further cleansing of the metabolic toxic load upon the activity of the Liver and Kidneys and Spleen, thus resulting in the cleansing of the Bloodstream, and alleviating all these organs.

"We are, however, apt to dismiss from our minds unpleasant symptoms of bodily failure, till they become practically important. Anxiety about health may sometimes be premature and pusillanimous, but it may also be true that some people dismiss unpleasant symptoms from their minds because they are reluctant to be anxious, are indeed afraid to face anxiety" - Sir Edward Grey of Fallodon, Viscount in "Autobiography".

Chapter 16

Gastro Intestinal Tract

"There is indeed no case of disorder in which the stomach and other parts of the digestive system are not affected, and the profession and the world are under the greatest obligations to Mr. Abernethy and others, for disclosing to them, in the most convincing and impressive manner, the truth, which so long lay unheeded, that health and strength spring from a right performance of the chylopoietic functions, and weakness and disease from their disorder and derangement." - Charles Turner Cooke, Surgeon in "Observations on white Mustard seed, in affections of the liver, internal organs", 1827.

"Broussais has demonstrated, that most internal diseases have their primary seat in the irritation of the membranes of the stomach and intestines." - Dr Lavolly in "Manuel Hygiene", p. 21.

"Let but this citadel of the animal system (the digestive organs) languish, and the enemies of human health will speedily attack the out-posts, and make an easy conquest of the whole. The mucous membrane of the stomach and of the intestinal canal, being much exposed to the action of irritating causes, is far more frequently the seat of irritation than any other structure of the system, and it is, almost invariably, in a deranged condition in all general diseases." - Professor Eberle, in "Eberle's Treatise on the Practice of Medicine", 4th ed. Vol.I, 1855.

"What's The Deal With Food Allergy Testing: The only thing these tests are demonstrating is that there is some intestinal permeability, an assumption I already make for every patient presenting with mood, behavioural, and cognitive symptoms that are causing distress. Does anyone not need to heal their gut, the seat of our physical health, digestion of emotions, and centre of our power? We all do, and it begins with creating safe conditions for our guts to self-repair." - Dr Kelly Brogan, MD, 2018.

Function of the Digestive Tract

The function of the digestive tract is to deliver to the body organic and inorganic substances which are necessary for its maintenance.

Gastro Intestinal Tract and the Neuroses

"Dr. F. S. Pearce (Boston Medical and Surgical Journal, 8 March 1900) states that perhaps one great reason why the sympathetic system has not been given enough import in practical medicine and therapeutics is because morbid conditions of the same as in health do not give rise to any painful sensation and therefore, when pain does occur it is directly of cerebro-spinal origin." - in "Alienist and Neurologist", Vol.21, 1900.

The Gastrointestinal Tract in Nervous Disease

"The intimate relation between the central nervous system, organs, and functions of the body especially, cannot be too forcibly emphasized.

Recent anatomical and physiological experimentation, now being pursued through the aid of vivi-section, is proving more and more the wonderful role played by the "abdominal brain", as some anatomists have dignified the ganglia of this to be.

Bearing in mind the wonderful controlling influence of the sympathetic nervous system, as shown by the preservation of life under profound anesthesia, the justice of styling these ganglia subconscious brains is the more appreciated; and the wonderful influences even then of its reflexes upon important centres, as respiration, the writer has recently had demonstrated to him in a male, aged thirty years, whom he had operated on for fissure in ano.

While under profound etherization the respirations could be controlled (inhibited) by wide dilatation of the sigmoid flexure by means of a long bivalve speculum.

Perhaps one great reason why the sympathetic system has not been given enough import in practical medicine and therapeutics is because morbid conditions of the same, as in health, do not give rise to any painful sensation, and, therefore, when pain does occur it is directly of cerebrospinal origin. We very often, therefore, fail to seek the real reflex primogenesis of morbid states presenting symptoms for relief.

In another place we have emphasized the importance of considering the sympathetic system's influence in the causation of neurasthenia through disturbance of the reproductive organs — a subject that has been widely discussed and must be accepted as proven.

While similarly, of course, co-relation of the great laboratory of the body through the sympathetic to the cerebrospinal axis, both physiologically and

pathologically, needs no scientific advocate to further establish it, yet specific cases bearing upon gastro-intestinal disorders and nervous disease may prove of some value for obtaining a more widespread recognition and a proper therapeusis of the less manifest diseases of the nervous system which still do have the same pathogenesis.

Admitting the difficulty of ascertaining cause or effect frequently, even where there is evident co-relation between nervous disease and gastro-intestional disorders, the point we wish to consider especially is to determine how many cases are relieved by treatment of the primary or secondary gastro-intestinal state; and more scientifically to seek out given cases of nervous disease greatly aggravated by the intestinal trouble, or, indeed, entirely caused by it.

Savill (1899), in his recent monograph on "Neurasthenia," adds zest to investigation of these allied nervous states of the human body.

Impetus in the study of aberrations of kidney excretion— not an index of renal disease, however — was first given the writer through making the urinalyses in a large number of cases of nervous diseases in the practices of Drs. S. Weir Mitchell and John K. Mitchell. The results of uric-acid findings have been published, and while indican is tested for in almost all cases we have not up to this time made careful analysis of its possible import in nervous disease.

The whole subject of irritation and auto-intoxication, per se, as causal factors of disease of the nervous system is most intricate in its exact determination for the therapeutic point of view, which is our most to be desired knowledge.

For instance, in a case of large ovarian tumor, as reported by Beyea recently, to my mind, the glycosuria was due to irritation of the glycogenic centre in turn preventing metabolism.

The diabetes here disappeared after removal of the tumor.

Conclusions

We have 3 classes of disease, in which the Nervous System is more or less intimately influenced by Gastrointestinal Disorder and usually of a Toxic Nature:

1. (a) Neurasthenic states, general or in localized areas of distribution (most common);

(b) Where organic changes are present in the nerve cells (sclerosis). Both of these influences certainly lower resisting power and cause improper distribution of nerve force to the gastro-intestinal trad. This leads to dilatation and perversion of the enteric secretions, thus giving rise to fermentations of the stomach contents, etc., products of which are reabsorbed, further disturbing the metabolism and aggravating the symptoms of neural disorder.

2. Cases where long-continued gastro-enteritis causes organic change in the mucosa and gastro-intestinal glands, including the liver and pancreas, of course — thus making the primal point of disease an irritating fermentation, with the

elaltorations of toxins. These, with the hyperacid secretions, especially of the stomach content, are in part absorbed into the system, producing a constant auto-intoxication, as would excessive tobacco or any other poison, — thus intoxicating through the blood the central nervous system until we have finally, in slow process, asthenia set up in the neurons, innervation of the gastro-intestinal tract at that moment being perverted through the efferent, specialized, and trophic nerve twigs.

3. There must be a mixed class of cases in which neurasthenia, so-called, or organic nervous diseases are associated, pari passu, with disorders of digestion of a functional or organic nature. Admitting the difficulty of determining when (1) and (2) exist—even when the cause and effect certainly do maintain—for this reason it seems logical to state that a large number of cases placed in the 3rd category belong by right to the preceding two subdivision.

The more dose histories of our cases we secure, the more exact clinical studies made of symptoms and signs in the individual case, together with careful analyses of the secretions and excretions of the body, thus utilizing the associated import of such phenomena as indicanuria for indices, will the better results be obtained in treatment. So, also, will such closer observation in the direction noted more surely place the association of neural and somatic diseases out of the less intricate classification we have termed mixed.

The individual case study as to heredity, diathesis, or temperament, must needs be broadly taken into account.

There does seem to be the greatest reason to assume the acid, neutral, and alkaline temperaments, with their predispositions and peculiar immunities, in drawing any conclusions of the case.

An admirable article by Dr. Albert E. Sterne in the Philadelphia Medical Journal of 2 December 2, 1899, elaborates this, as it seems to us, very important side of medicine.

Nor should we fail to recognize that secretions and excretions are influenced by the emotions, — for example, serous diarrhea produced through emotion or overwork, as shown in the novitiate to the examiner's room, — or application to hard mental labor in a neurasthenic subject.

These physiological phenomena are shown in full light by the work of Darwin on "Expression of the Emotions in Man and the Lower Animals", hence the subtle metaphysical influence must be weighed in any case along with the accurate scientific knowledge indicated.

The more we study the sympathetic nervous system, the more clearly will morbid phenomena, such as the association of biliary disease or irritation causing disturbance of menstruation, of serous diarrhea substituting menstruation, or, indeed, vicarious menstruation, be better understood. The fact that pain seldom enters into these disturbances as a prominent factor at least misguides the patient as to interpreting his being ill, and the physician, too, in determining the conditions from the limited objective signs and symptoms alone.

Addendum

Aside from the subject of intoxication, of course other irritants of a mechanical nature do produce nervous symptoms. I know of a case in charge of a western physician where chronic eczema was cured by stretching a stricture of the rectum, and another case of epileptic convulsions ceasing after a cure of a rectal fissure which had been long neglected.

A similar case has been recently reported in the Boston Medical and Surgical Journal, December 1899.

The writer wishes here to refer also to the New York Medical Journal for 29 July 1899, in which he has reported a case of hebephrenia, with all its typical vagaries, undoubtedly due largely to persistent constipation. The girl is perfectly well today." - Dr F. Savary Pearce, MD, Instructor in Physical Diagnosis, University of Pennsylvania in "Boston Medical and Surgical Journal", 8 March 1900.

Auto-intoxication in Paediatric Neurology

"Dr. O. J. Kauffmann in the Ingleby Lectures (Lancet, 14 June 1900) expresses the opinion that a great proportion of cases of Epilepsy and Migraine met with in children is the result of chronic toxemia arising from the alimentary tract.

This same auto-intoxication is the factor in several other conditions which are universally recognized as predisposing causes of epilepsy, such as intestinal worms and rickets.

The gastrointestinal disorders which lead to toxaemia are excessive amount of food, unsuitable food, catarrhal condition of the stomach or of the small intestine, and constipation. As cathartics in these cases, the saline purgatives are invaluable; every effort must be made to bring about regular and sufficient defecation.

Attacks of migraine are often aborted by administration of a smart emetic." - in "Alienist and Neurologist", Vol.21, 1900.

Gastro-Enterology and Cardiology

"The problems of gastro-enterology and cardiology in a given case are often closely related. In the physician's efforts to become expert in a chosen field he must not become a localist.

Most patients consult, or are referred to, the cardiologist with the belief that their condition is primarily due to a disorder of the heart, but many of their symptoms are of gastro-enterologic origin.

A study of symptoms reveals that the most frequent gastrointestinal symptoms encountered in the practice of cardiology are:

1. Flatulence
2. Anorexia
3. Nausea

4. Vomiting
5. Dysphagia
6. Jaundice
7. Abdominal Pain

It might be said that every patient with cardiac disease at some time or another complains of a gastrointestinal symptom.

A better understanding of this can be had by a consideration of the cardiac-gastrointestinal relation under three main headings:

1. Mechanical Aspects.
2. Chemical, Toxic and Infectious Aspects.
3. Reflex Disturbances.

Mechanical Aspects

Cardiovascular Pathologic Conditions Affecting Abdominal Viscera

Under the heading of mechanical influence of cardiac abnormalities on the abdominal viscera, among the most obvious are embolic manifestations from a valvular vegetation—mitral or aortic—or from a thrombus on the left side of the heart.

Effect of Pathologic Conditions of the Abdomen on the Cardiovascular System

Conversely, there are a number of intra-abdominal conditions which may have a direct mechanical influence on the function of the heart. Among the most frequently seen is flatulence.

Chemical, Toxic and Infectious Aspects

Cardiovascular Pathologic Conditions Affecting Abdominal Viscera

Andrus and Carter (The Mechanism of the Action of Hydrogen Ion upon Cardiac Rhythm, J. Clin. Investigation 1927) have shown that cardiac tissue is particularly sensitive to alterations in hydrogen ion concentration.

This may occur in the cardiac muscle itself, through products of its own metabolism, or by changes in PH or the carbon dioxide content of the fluid bathing it.

Andrus and Carter suggested that the difference in hydrogen ion concentration within and without the cell is a factor in controlling its excitation.

How sensitive are the tissues of the gastrointestinal tract under these conditions? Long-standing chronic passive congestion of the liver may disturb its

function so that a change takes place in the albumin-globulin ratio of the blood, the osmotic pressure of the plasma is lowered and the small globulin molecule has ready access to the interstitial fluids.

By this means inter-cellular edema in the gastrointestinal tract and elsewhere is increased, and disturbances of gastrointestinal function result.

The fever, leukocytosis and high erythrocytic sedimentation rate following coronary thrombosis are evidences of generalized toxemia, with the cardiac lesion as the direct etiologic agent.

Jaundice, which occasionally occurs in congestive heart failure, (M. A. Kugel, S. S. Lichtman, in "Factors Causing Clinical Jaundice in Heart Disease", Arch. Int. Med. 1933) may be a manifestation of toxemia or may again be only the result of hepatic congestion secondary to failure of the circulation.

Effect of Pathologic Conditions of the Abdomen on the Cardiovascular System

The number of extra-cardiac diseases which affect the cardiovascular system by some obscure chemical or toxic means is numerous.

The field of Gastro-Enterology certainly includes many of these:

Typhoid Fever, Acute and Chronic Dysentery, Acute and Chronic Disease of the Gallbladder, to mention only a few.

Reflex Disturbances
Cardiovascular Pathologic Conditions Affecting Abdominal Viscera

The question of reflex disturbances which find their primary seat in the heart, with referred symptoms elsewhere, has received much attention, particularly in coronary thrombosis simulating acute abdominal disease.

The mechanism of acute and chronic cardiac lesions giving rise to pain referred to the abdomen, simulating disease of the gallbladder, peptic ulcer and pancreatitis, is apparently the result of a crossed reflex arc whereby pain fibers from the cardiac regions enter a segment of the cord through the vagus or sympathetic chains and are confused with the impulses entering the same segment of the cord from the abdominal viscera, and thus the pain is "referred" to the abdomen.

This referred pain is often seen in angina pectoris and pericarditis.

Other diseases which may be confused with coronary disease are gastric ulcers, acute pancreatitis, mesenteric embolism, acute intestinal obstruction, esophageal spasm and diverticulitis." - Dr Louis Faugeres Bishop, MD in "JAMA", 7 Jan. 1939.

Important Direction to Observe

"It is an axiom in Medicine, that alteratives produce the best effects when administered in small doses: they do no good when, either by being given in an increased dose, or by being combined with other substances, they are hurried off by the first passages; they should be suffered to act on the absorbents, and ultimately be carried off by the other different Emunctories.

Now as the object of the medicine here spoken of is not simply relief to the bowels, but the restoration or communication of vigour, through their instrumentality, to the whole frame, like all other tonics it should be taken regularly in divided doses, and at such intervals as will ensure its uninterrupted influence.

The aperient effect produced by it then should govern not the number of the doses, but only the quantity of each dose. It is, however, of no less moment that this effect should be as regularly produced: indeed a knowledge how to regulate the alvine evacuation, is of the greatest importance towards the prevention of disease; yet, odd as it appears, there are but few people who understand what constitutes a sufficient evacuation; costiveness gives no pain, and if they have none and go to stool (without considering if it is a sufficient stool) they think that all is done, yet in many cases this is the very hinge on which health turns.

Hence the necessity of specific advice, on this point, to those who either wish to preserve good health, or who are in quest of the lost treasure.

Cabanis, attributes all diseases to derangement of the lower belly (Bas Ventre), and, with some qualifications, he is indisputably right." - Dr Charles Turner Cooke, Surgeon, in "Affections of the Liver, Internal Organs, and Nervous System", 1828.

The Sense of Smell and the Organs of Reproduction

"The sense of smell and the organs of reproduction, have particular sympathetic relations between them.

But, in addition to the intestinal canal and the sense of smell, the relations are neither less narrow nor less extensive: and if various disease states of the digestive organs can distort the impressions of odours, several diseases of the abdomen completely abolish the faculty of to receive them.

As to taste, no one is unaware that his manner of feeling is entirely subordinate to the consciousness of well-being, or of general malaise (disease), especially to the feeling which results from the state of the stomach and the other parts directly employed by the patient digestion; a state which ordinarily directs him with safety, for the choice and quantity of foods, provided that the imagination does not come to mislead this happy instinct.

Liaison of madness with different diseases of the viscera of the lower abdomen, and with certain lesions of the cerebral pulp

It is by means of a great quantity of facts collected in all countries and all ages, that the constant and regular connexion of madness has been recognized with various diseases of the viscera of the abdomen, and with certain sensible lesions of the cerebral pulp, or adjacent parts, able to act immediately on it. But what makes this connection even better is the usefulness, well verified also, of certain remedies applied to primitive disease, the action of which removes, together, cause and effect.

Thus, in the atrabilious follies, the ancients used with confidence, and the moderns themselves have since advantageously employed the fondans, the emetics, and the energetic purgatives: in those which depend on the slow inflammation of the organs of reproduction, and of the brain itself, or the more acute phlogosis (inflammation) of the stomach, other epigastric parts, and cerebral meninges.

There is a striking example of the relations which belong to the neighbourhood of the parts, in the great influence of the: Stomach, liver, and spleen, on the Diaphragm. It does not appear, indeed, that another cause can associate so closely this organ to all their affections, and it is evident still more clearly that we must attribute to the general plan of organization, which renders them common several great nerves and vessels, the reciprocal and multiplied sympathies of all the viscera of the abdomen and the role played by haemorrhoidal engorgement in several diseases of these same viscera, especially in their obstructions.

But the kind of influence exerted on all the parts, a major and predominant organ, depends above all on two particular circumstances: I mean the degree of its own sensitivity, and the importance of its functions." - Pierre Jean Georges Cabanis, in "Rapports du Physique et du Moral de l'Homme", 1815.

Dementia Praecox and the Adolescent Psychoses From the Organic Viscera Viewpoint

"A study and classification of the adolescent insanities as worked out from the viewpoint of underlying toxic factors.

The fundamental grouping of the psychoses of adolescence is into (a) a degenerative group, and (b) a non-degenerative group.

The latter group which we would consider the curable group under proper conditions of therapy we would further sub-divide into:

1. Toxic factors were leading to constitutional and endocrine disturbances at the adolescent period.

2. Steadily progressive infections in the early adolescent period, belonging in a general way to the focal infections, and leading to reactionary states in the endocrine field.

3. Non-determined infections with thyroidal disturbances.

4. Stress reactions in the moron groups, due either to infections or overload leading to a praecox syndrome.

The therapeutics of the various mental states, is determined by an intensive study of the above factors. In a discussion of the adolescent insanities and their curability it is necessary to keep in mind that we are dealing with a subject somewhat broader and more inclusive than dementia praecox (schizophrenia) and manic-depressive insanity.

This group of border-line psychoses, i.e., border line between the dementia praecox group and simple types of toxic and other psychoses. Schwab, some years ago, pointed out that all or nearly all the symptoms of dementia praecox could be found in embryo in the normal adolescent.

Buckley has recently called attention to this. We find from this as a starting point that the accentuation of any one of these symptoms may lead to marked conduct disorders.

From the boy at college who becomes so introspective to the shade of his hair as to lead to neglect of his work and withdrawal from his companions, to the fully developed praecox is a wide gap that needs filling in our nosology and a more thorough understanding in relation to the fully developed adolescent insanities.

A continuing intense intoxication may cause derangement in a relatively normal mentality; or a relatively slighter continuing intoxication may cause an equally intense psychoses in a brain sensitized by disease, defect or bad heredity.

In other words the fundamental problem of therapy is the diagnosis of the case; not of the type of insanity, but the diagnosis of the entire machine, with an estimate of the functional efficiency of every important organ of the body as far as this can be secured.

In all types of insanity, we concern ourselves not with the type of mental disease so much as with:

1. The physical machine as a whole.

2. Disease and physical damage of organs.

3. Functional derangement of viscera.

4. An estimate of the effect of these on the nutrition of the brain through damage to its nutritional medium (the blood) by alteration in its content (anemia, etc.), or by the addition of toxic material from one or more organs.

5. Psychogenic factors.

6. Mental symptoms.

When all of this information is at our disposal the case automatically classifies itself for therapeutic purposes.

My attention was first called to the influence of visceral factors in mental disease and particularly in the adolescent insanities in the study of the effect of tuberculosis on the nervous system.

At the Henry Phipps Institute cases of neurasthenia that I had seen treated years before at the Orthopaedic Hospital by the Weir Mitchell School presented themselves as fully developed cases of tuberculosis of the lungs, and some of these cases at autopsy showed evidence of a disease of long standing as the source of their nervous disease.

In the wards for advanced dying cases, as the case progressed to advanced anaemia, emaciation and mixed toxaemia we could follow, in some cases, from month to month the advance from a normal mentality, to suspicion, transient, and finally firmly fixed delusions of persecution.

In an intensive study of mental states in tuberculosis, I was convinced that some of the adolescent mental states met with insanitaria for early tuberculosis were the result not of the lesion of the lung, which often as not was negligible and frequently not active, but the result of damage to the machine early in life. It is accepted I think that in the vast majority of cases of tuberculosis of adults the implantation of the germ occurs in childhood.

In one of these cases of adolescent insanity of the pulmonary type the life history of the disease, so to speak, may be worked out as follows:

In the first year of life a serious infection with a disease occurs that takes several months and frequently two to three years before the infection is overcome by the defences of the body.

During this period of active growth of the body and the rapid growth of brain and mentality the main function of the organism as a whole and the defensive mechanism in particular is concerned with throwing off the infection.

The facts are:

a) the vital tone of the organism at this period is very low,
b) there is marked disturbance of function of the gastro-intestinal tract,
c) a well-defined anaemia,
d) chronic febrile state of low grade,
e) marked nervous irritability,
f) lowered blood pressure.

The endocrine system at this time should be primarily involved with growth and balancing the metabolism of the organism, and is now by disease

switched to a defence of the organism, and an attempt at balancing a complex intoxication from deranged visceral function, or to a double or even multiple

function comprising all of these, we can understand that such a stress on this system so necessary for growth and development will be felt through the life history of the organism.

The work of Stanton and others as to the thyroid and my own work on the pituitary have shown the direct effect of tuberculosis on these organs.

The effect on the adrenals is well known and need only be mentioned.

We can well understand the effect of such a diseased blood state nourishing the brain at its most important period of development.

As a direct result of this infection in infancy or early childhood as we progress to adolescence we have in this marasmic group, the conditions as follows:

1. Arterial hypotension with systolic blood pressure from 90 to 110.
2. Physical and vital undertone, with lessened physical vitality, and underweight.
3. Visceroptosis, as a result of the shock to the system from the intensity of the infection.
4. Dropped, phthisenoid type of chest.
5 Flat feet from relaxed muscular tone.
6. A tendency to general catarrhal conditions of mucous membranes, particularly of the gastro-intestinal tract.
7. A tendency to a development of the chlorotic types of anaemia.
8. Marked increase of the tendon reflexes.

At the adolescent period there is a readjustment of the endocrine system and its functions due to the advent of the active sexual reproductive function.

I assume that the early stress of disease at infancy or early childhood, when the original infection occurred, has led to such damage to the endocrine system, that now at the second critical period, this system fails in its normal complex function and leads to a complex intoxication, that fixes the split personality, and that may cause praecox or other types of adolescent insanity.

In insanity found in such cases in addition to the factors enumerated above, not infrequently we find focal infection in the teeth, tonsils, accessory head sinuses, appendix or gall bladder areas.

I have detailed the development of the pulmonary type as an example of what may happen to any serious infection in infancy and childhood if it continues sufficiently long. This is true of pertussis, or syphilis, or chronic focal infections in tonsils, teeth, sinuses, appendix, or gastro-intestinal tract.

Unless the case is studied from the life history of the machine as a whole and the effect of early disease, in addition to estimating the functional efficiency of the organism as a whole and its individual visceral components, it will be difficult to understand the complex mental case at adolescence, and any treatment will necessarily be empirical and a stab in the dark.

In other words we must estimate not only what disease the patient has but also what patient the disease has.

Therapeutics is an art, not a science; diagnosis is a science; and an art only in reference to its expertness and thoroughness. Therapeutics cannot be learned out of a book; one must serve ones time under the direction of a teacher. In the beginning of the treatment of a case we employ psychotherapy.

A man can never cure mental cases who does not believe he can cure them.

This is the fundamental psychotherapy.

A careful detailed study of the case is made for all possible infections of the body, either local, focal, or general, and an estimate made of disease or functional inefficiency of all the viscera when this is possible, and also of the endocrine organs. It need not here be stated that as soon as possible all diseased conditions should be cleared up and focal infections eliminated.

It is quite useless to proceed with the treatment of a mental case while a continuing infection exists. In removing any one or all possible factors in order to prevent the continuation of the disease to the point of permanent damage to the brain tissues. With a relief from infections there is a general tendency of the body functions and of the deranged functions of the various viscera to return to normal.

Hydrotherapy internally and externally is of great value.

Gastrointestinal Auto-intoxication must be carefully treated. Flushing of the colon, by lavage of the colon, and of the entire intestinal tract by hydrogogue purgation is of great value in many cases.

Cotton has called attention to the role that colonic stasis and colonic disease plays in many cases. The value of the usual forms of hydrotherapy depends largely on how scientifically they are prescribed for the individual case.

Our knowledge of the endocrine system, its functions, its pathology, is so deficient even in essentials that one approaches this subject on paper with fear and trembling and doubts. Notwithstanding the Abderhalden tests for function, the application of endocrine therapy must necessarily be experimental and empiric.

That there is a group of thyroid cases, plus and minus, a group of pituitary cases, a group of adrenal cases, a group of gonodal cases, there can be little doubt.

I have dealt in this paper with the organic visceral side of the psychosis.

That there is a psychogenic side needing treatment and re-adjustment there is no question, such re-adjustment is made almost automatically during the progress of the treatment.

To the doubting Thomas who does not believe in infections, their results on the brain, and the general organism, I would refer him to a careful detailed study of the "Index of 1180 Post-Mortems of the insane, State Hospital for the Insane Norristown", by Dr. H. J. Sommer and Allen J. Smith, 1908." - Dr Daniel J. McCarthy, MD, Professor of Medical Jurisprudence, University of Pennsylvania in "The American Journal of Psychiatry", January 1922.

Chapter 17

The Three Brains : Cerebral, Abdominal, Pelvic

"We are reminded that the brain is connected to the rest of the body." - Dr Michele T. Pato, MD in "Psychiatric Times", March 2020.

The Brain in Relation to the Emunctories

"**An intimate relationship exists between the brain and the stomach, because of the large size of the nerves which go from the brain to the stomach, thus rendering this part of the body more sensitive than other organs.**

Thus vomiting of bile occurs in fracture of the skull if the meninges are irritated; on the other hand gastric troubles are the source of a melancholic state of mind.

Many poisons which disturb the intelligence, also act directly upon the brain through the stomach. It is important to know that all such secondary brain diseases frequently last longer that the primary diseases of the bodily organs." - Smith Ely Jelliffe, MD, in "Alienist and Neurologist", Vol. 23, 1912.

The Brain Not the Sole Organ of the Mind

"It appears to be necessary that I should, in the first place, as clearly as possible express my ideas relative to the connection between the mind and the nervous system, and of the nature of that power which, in its full development, places man at the head of all other animals.

We have no evidence to show that the mind can exist independently of the nervous system. On the contrary, every fact in our possession bearing upon the question of their relation, goes to prove that where there is no nervous system there is no mind, and that where there is injury or derangement of the nervous system there is corresponding injury or derangement of the mind.

The nervous system consists of two essentially different tissues, which redistributed in varying proportions throughout the organism; the one of them, the ganglionic, or grey tissue, is collected in masses in the brain, the spinal cord, and in the course of the ramifications of the great sympathetic nerve; the other, the white tissue, exists in much larger proportion, and is also found in the brain and spinal cord, of which it constitutes the larger quantity.

Besides, the sympathetic nerve, the nerves of sensation and of motion, and the compound nerves, (which are both sensory and motor), consist entire y of white tissue.

Examined micros topically, the grey matter is found to be composed of cells, while the white matter consists of fibres.

As regards function the difference is still greater, for the grey matter is the generator of nerve force, while the white simply serves as the medium by which the force is transmuted.

The brain is by far the largest mass of nerve substance contained in the body of any animal possessing a brain; indeed, it far exceeds in bulk and weight all the rest of the nervous system together.

But all the grey tissue of the nervous system is not confined to the brain.

A large proportion of it is found in the ganglia of the sympathetic and some other nerves, and an amount second only to that of the brain in quantity—and, indeed, in some animals larger.

By the term mind I understand a force developed by nervous action. It bears the same relation to grey nerve tissue that heat or electricity or light does to chemical or mechanical action.

All the manifestations of which the mind is capable in its fullest development are embraced in four groups: perception, the intellect, the emotions, and the will.

Either one of these may be exercised independently of the others.

Concluding

1. That of the mental faculties, perception and volition are seated in the spinal cord, as well as in the cerebral ganglia.

2. That the cord is not probably capable of originating mental influence independently of sensorial impressions - a condition of the brain also, till it has accumulated facts through the operation of the senses.

3. That as memory is not an attribute of the mental influence evolved by the spinal cord, it requires, unlike the brain, a new impression, in order that mental force maybe produced." - Prof. William A. Hammond, MD, President of the New-York Neurological Society, in "Journal of Nervous and Mental Disease", V.3, 1876.

The Body Renews Itself

Just because there has been the breaking of cellular force in the brain, so that reflexes are not possible in the body at present, does not indicate that these need necessarily to remain so. For the body renews itself, every atom, in 7 years.

- How have ye lived for the last 7?
- And then the 7 before?
- What would ye do with thy mind and thy body if they were wholly restored to normalcy in this experience?

- Would these be put to the use of gratifying thine own appetites as at first? Will these be used for the magnifying of the appreciation of the love to the infinite?
- For who healeth all thy diseases?
- If ye think it is the doctor or the surgeon, who is thy doctor?
- Is His life different from your own?
- Life itself, comes from the infinite. There ye must begin if ye would have healing for this body, not merely by saying:

"Yes, I believe Jesus was the Son of God. Yes, I believe He died that I might have an advocate with the Father."

- Yes, this also - but what are ye doing about it? Are ye living like that?
- Do ye treat thy brother, thy neighbour, thy friend, thy foe, as though this were true?
- For no matter what ye say, the manner in which ye treat thy fellow man is the answer to what ye really believe.
- For the manner in which ye treat thy neighbour is the manner in which ye are treating thy Maker.
- And be not deceived, God is not mocked; whatsoever a man soweth that must he also reap.

The Physician's Part in Preventing Mental Disorder

"While the best of years of my life were given oversight of a hospital for the insane, and while the experience then gained naturally biased me strongly in favour of any movement directed towards the prevention of mental disorders, it must be recognized that one who has been called upon to render service only to those in whom mental disorder is already well developed can have little more than theoretical conceptions relative to the conditions which underlie break- down of the faculties of mind.

Despite the fact that the evidence that heredity is prominently concerned in the causation of insanity is still largely circumstantial, it is impossible for one who has followed out the family history of many cases to dispossess himself of the belief that it is a potent factor in predisposing to and even in determining mental breakdown.

For while the seemingly determinant factors may be external, they are often consequential upon the mental attitude of forebears. This applies especially to such things as home and personal hygiene, food and habits generally.

And then the practitioner has also the opportunity to sometimes advise the mode of life to be followed by those whose heredity predispose them to mental disaster.

In such case he should realize that everything possible should be done to assure the **corpus sanus**, which we believe to be so essential to a **mens sana**.

Disordered Action of the Mind

For many years prominent psychiatrists have been urging the importance of toxic states in the production of mental disorder, and the age of the individual appears to have an influence in determining the effect of a toxic state.

The toxic states concerned in the production of these psychoses, they may often be prevented by careful attention to the general health.

It would seem to be important that the various Emunctories should be kept functioning properly and that the diet and habits of life should not overtax these organs.

These pre-cautionary measures are to be advised in all persons, but more particularly in the predisposed, and the advice of course applies with especial force to the years which constitute the critical periods.

It is unnecessary to say that sepsis appearing in the parturient woman adds to the peril of mental developments at a time when many emotional and physical stresses have already subjected the patient to much danger, so that this is to be regarded as one of the reasons for doing everything possible to assure a normal labour and convalescence.

Any departure from the mental norm of an individual should cause his medical adviser the gravest concern, and should lead to an immediate investigation, thorough and comprehensive, of the physical condition of the patient with the object of discovering a possible physical basis for the mental symptoms.

No greater disaster could be conceived than a chronic mental derangement which might have been averted by careful and diligent attention to the first warning signs." - Dr. W. H. Hattie, MD, Provincial Health Officer, Halifax, NS, in "The Public Health Journal", Vol. 10, No. 7, July 1919.

The Cerebrospinal Fluid in Diagnosis

"The value of this examination as a differential diagnostic agent in many obscure neurologic and psychologic disturbances. No direct analysis can be made in nervous and mental diseases, so our efforts must be expended in searching the secretions of the body for evidences of the products which attend pathologic alterations of the nervous tissue, particularly the brain.

Our first efforts resulted in failure, because the search was made of the blood, urine, and faeces, which represent the sum total of all of the metabolic products of the body. Nervous tissue comprises only about 2%. of the total body, hence one can readily understand why such a small amount of products escapes detection.

The cerebrospinal fluid as an aid in diagnosis in all obscure nervous conditions

The cerebrospinal fluid comes into more intimate relation with nervous tissue than the other secretions, so should contain the products of metabolism of nervous tissue in more concentrated and in least altered form.

The principal source of the cerebrospinal fluid is to be found in the choroid plexus of the lateral ventricles, and that it is a true secretion.

By equalizing pressure it is supposed to adjust the mechanism of the circulation of the nerve-cells. Its pressure is thought to equal or exceed intravenous pressure.

Increase in pressure is frequently found in meningitis in all its forms, hydrocephalus, cerebrospinal syphilis, organic nerve conditions, brain tumour, and in traumatism of the brain.

It may also be increased, at times, in tabes dorsalis, paresis, cerebral arteriosclerosis, chlorosis, and during epileptic attacks." - Dr Charles Clyde Sutter, MD in "International Clinics", Vol.2, 25 Series, 1915.

Special attention should be taken in regards to the Cerebrospinal Fluid. Cerebrospinal fluid should be made to circulate, always, even more so, and specially in those cases of meningitis. Like all stasis, cerebrospinal fluid stasis must be avoided, and resolved, in order to solve conditions such as meningitis.

The Abdominal Brain
Gut-Brain axis

The intestines have their own nervous system, the ENS (enteric nervous system), which has over 500 million neurons. ENS nerve cells communicate with brain neurons through the 'gut-brain axis'. The actions of ENS neurons are affected by events in the gut environment, including the activities of bacteria that dwell there.

First Mentions of Abdominal Brain:

"Abdominal Brain" - Wrisberg, 1780.

"The abdominal brain" - Dr Leila G. Bedell, MD 1885.

"Section on Abdominal Brain", in Principles of Osteopathy – Dr Charles Hazzard, DO,1899.

"Control of Emotions Through the Abdominal Brain" - Kill-Fear Secret, 1902.

"The abdominal and pelvic brain; with automatic visceral ganglia" - Dr Byron Robinson, MD 1907.

"The Second Brain: A Groundbreaking New Understanding of Nervous Disorders of the Stomach and Intestine" - Dr Michael D. Gershon, MD 1999.

Dr Michael Gershon, MD has devoted his career to understanding the human bowel (the stomach, esophagus, small intestine, and colon). His 30 years of research have led to an extraordinary rediscovery: nerve cells in the gut that act as a brain. This "second brain" can control our gut all by itself. The brain in our head and the one in our bowel - must cooperate. If they do not, then there is chaos in the gut and misery in the head - everything from "butterflies" to cramps, from diarrhoea to constipation. Dr. Gershon's work has led to radical new understandings about a wide range of gastrointestinal problems including gastroenteritis, nervous stomach, and irritable bowel syndrome. The Second Brain represents a quantum leap in health knowledge and is already benefiting patients whose symptoms were previously dismissed as neurotic or "it's all in your head".

The Pelvic Brain
Ganglion Cervicalis Uterina

"I have termed the collections of nerve ganglia located closely adjacent to either side of the cervix and vagina - the Cervico-Uterine Ganglion - The Pelvic Brain.

What is a brain?

A brain is an organ that:

1. Receives Sensation.
2. Reorganizes.
3. Emits Emotion.

A Complete Nervous System consists of:

1. A Cell (Ganglion a Re-organizer).
2. Conducting Cord (Nerve strand).
3. A Peripheral Apparatus (Sense or collecting organs).

The Cervico-Uterine Ganglion consists of:

An aggregation of Ganglion Cells, and hence it is a Brain.

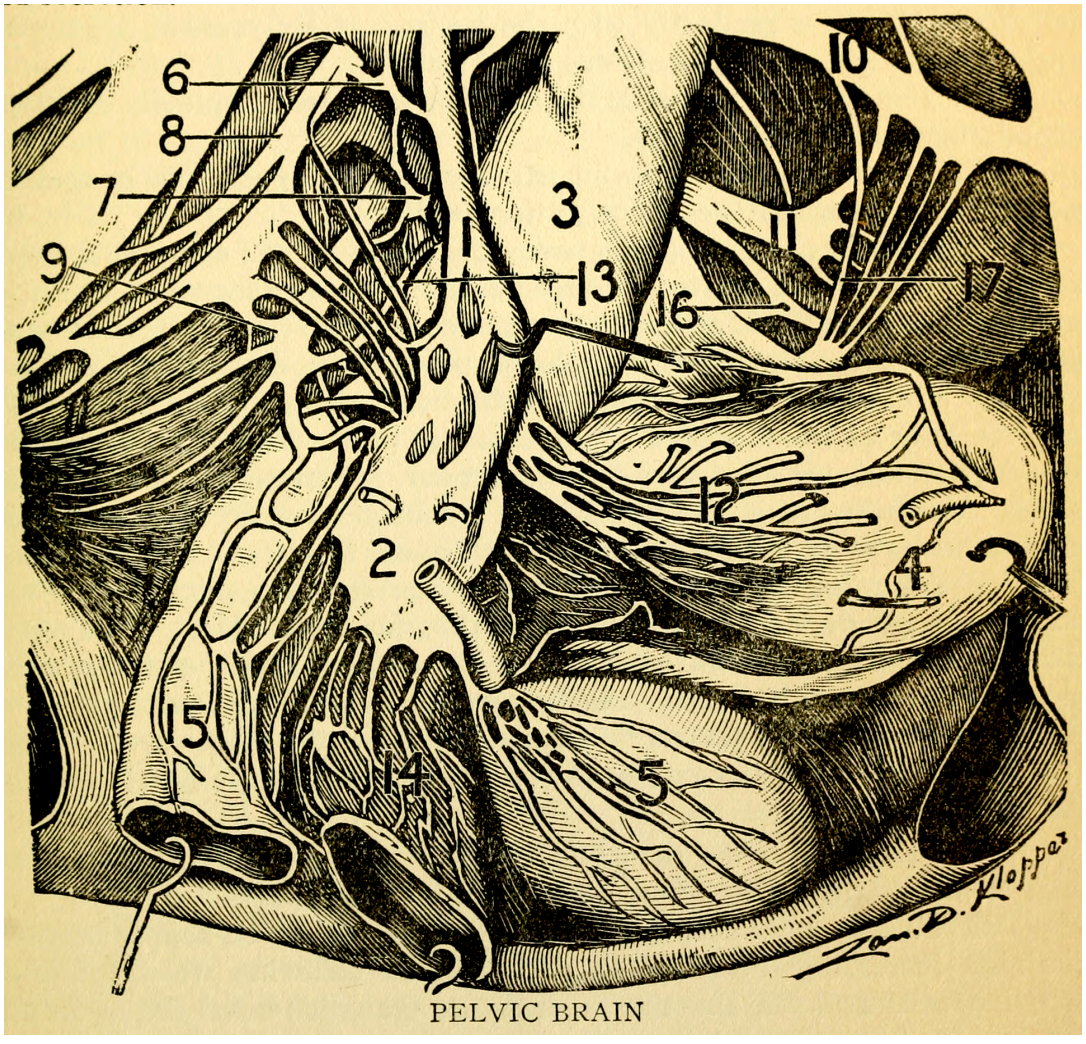
Since it is the largest collection of ganglion cells within the pelvis, it is the pelvic brain.

The Abdominal Brain (Ganglion Celiacum) primarily dominates the Tractus Intestinalis.

The Pelvic Brain primarily dominates the Tractus Genitalis.

The Genital Tract, being located at the distal end of the body, at an extensive distance from the Abdominal Brain, requires an accompanying local, independent ruler:

The Pelvic Brain.



"An illustration of the cervico-uterine ganglion or pelvic brain (1 and 2). It is composed of: (a) the hypogastric plexus (1), the lateral sacral ganglia (6 and 7), and many nerve strands from the II, III, IV, sacral nerves. The pelvic brain was 3/4 of an inch long, 1/2 inch wide, and 1/6 inch thick, in the subject from which it was dissected and drawn; 3 rectum; 12 uterus; 5 bladder. It is a ganglion of giant power and majestic size. Drawn from my own dissection.

In this subject the dissection was rather deficient than excessive, hence, the pelvic brain presents more of a solid ganglion than a fenestrated ganglion, or ganglionated plexus. 1 and 2 pelvic ganglion. 3 rectum. 4 uterus. 5 bladder. 6 and 7 sacral ganglia. 8 last lumbar nerve. 9 IV sacral nerve. In this subject the pelvic brain results from the union of the plexus interiliacus (1) and branches from II, III and IV sacral nerves."

As it contains a less number of ganglion cells; therefore, the abdominal brain dominates the pelvic brain. In the same manner the automatic renal ganglia, having a less number of ganglion cells, is dominated by the abdominal brain, yet they rule like a state and govern their own territory.

Likewise the abdominal brain dominates the tractus intestinalis, though the superior mesenteric ganglion is allowed to rule the rhythm of the enteron with the proximal half of the colon, and the inferior mesenteric ganglion is permitted to govern the rhythm of the faecal reservoir, or the distal half of the colon (one-half of the transverse colon, the left colon, sigmoid and rectum).

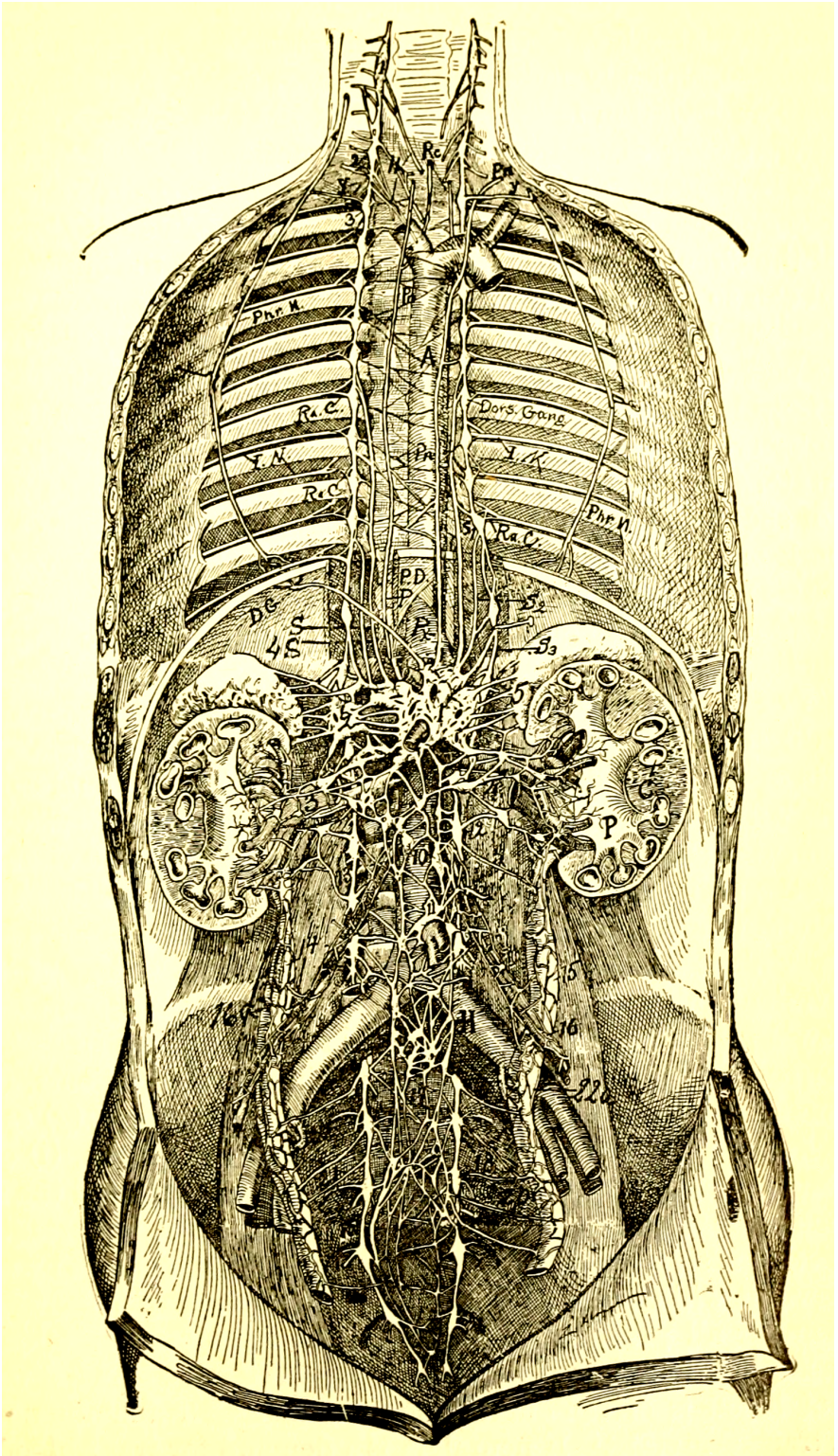
Hence the abdominal brain is the central potentate of visceral rhythm, assisted by numerous subordinate, yet practically independent rulers, stationed at various distances.

In a certain sense the abdominal brain resembles the pelvic brain, as the abdominal brain is modified by the incorporation in it of a cranial nerve (the vagus), while the pelvic brain has incorporated in it the sacral (spinal) nerves.

The genitals are supplied with 2 kinds of nerves, spinal (cervix, vagina and pudendum) and sympathetic (corpus, fundus, oviduct and ovary).

As regards the uterus the spinal nerves supply the cervix, and the sympathetic supply the corpus and fundus.

The pain from the sympathetic nerves is of a dull, aching, dragging and sickening character (when inflamed); the sympathetic should functionate, perform its rhythm painless.



NERVUS VASOMOTORIUS—GENERAL VIEW

"An illustration of the sympathetic nerve with pelvic and abdominal brain. In this specimen the ureters (calyces, pelvis and ureter proper) were dilated to the dimensions of an index finder; the channel of the tractus urinarius presenting no sphincters intact. This subject possessed a typical abdominal brain (1) as well as a well-marked pelvic brain (B). The ganglion hypogastricum (H) is well marked. This illustration presents fairly well the abdominal sympathetic with their varied anastomoses. The great ganglionic masses of the abdomen (1) and pelvis (B) are evident."

Scanzoni reports a woman paralyzed from the dorsal vertebrae distalward, who had a painless labour. Children may be expelled after the mother's death.

The spinal nerves supplying the genitals transmit pain of the most acute and lancinating character.

The spinal nerves supplying the genitals, in order of importance, are:
a) internal pudic;
b) the third and fourth sacral;
c) pudendal;
d) ileo-Inguinal;
e) genito-crural.

The sympathetic nerve supplying the genitals, consists of:

1. The great hypogastric plexus, which originates from the abdominal brain and the lateral lumbar chain. This great plexus passes from the abdominal brain along the aorta (aorta plexus) to its bifurcation at the sacral promontory, whence it forms a coalescence, or a kind of nerve disc, the hypogastric ganglion, which originates the 2 great hypogastric plexuses. They then divide and pass along the lateral walls of the rectum and vagina, many of the strands traversing between the blades of the ligamentum latum, and along the lateral borders of the uterus, to supply its corpus and fundus (the nerves of the uterus are best observed, according to my experience, by dissecting a 6 month's fetus which has lain in alcohol for some months).

The peritoneum of the fetus is transparent, and the nerve ganglia are reddish, hence visible. Spare cadavers are also successfully employed in exposing the hypogastric plexus. The hypogastric plexus is distributed in the ligamentum latum in the form of a fan, the periphery of the fan being the lateral borders of the uterus and the distal border of the oviduct at the Junction of the cervix and vagina one finds irregularly-shaped nervous ganglia (pelvic brain).

Trauma, shock on the hypogastric plexus, will kill in a few hours. I performed an autopsy on a woman with her first child, who had ventral hysteropexy performed on her 4 years previously, and in whom immediately after labor the uterus invaginated, killing her in about 2 and one-half hours from shock.

2. The ovarian plexus passes practically from the abdominal brain, however, actually from the ganglion ovaricum to the ovary along the vasa ovarica. It consists of nerve strands and ganglia. The hypogastric plexus sends strands to meet the strands from the ovarian plexus to supply the oviduct. An enormous mass of nerve tissue is found in the ovary. It is apparent that the sympathetic nerves supply the corpus and fundus, while the cervix is well supplied by the spinal from the 2nd, 3rd, and 4th sacral.

That the uterus is supplied by sympathetic nerves and the cervix by spinal nerves is significant in practice. For example, the uterus (corpus and fundus) is always ready for an abortion, because It is always in rhythm.

The cervix is never ready for an abortion because it is not in rhythm, being dominated by spinal nerves.

Abortion is worse than labour, from lack of drainage and consequent infection. The uterus being dominated by the sympathetic nerve is a rhythmical organ, and always ready to expel its contents. Any one can prove that the pregnant uterus is in a state of constant rhythm by placing the hand on the abdomen of a pregnant woman.

The cervix being dominated by spinal nerves, is not rhythmical, it is sober and quiet; a moderator, a guard, a sentinel, a breakwater against which dash the troublous waves of uterine, rhythmical, agitation.

I have observed these uterine rhythmical waves gradually increase in violence until the cervix was compelled to yield, by sudden dilatation, which means cervical paralysis (and, perhaps, laceration of nerves).

In this sudden paralysis (patulousness) and rapid recovery lies the fatal Infection story of many an abortion. When the rhythmical waves of the uterus become violent, disordered, and force the fetal ball with unnatural vigour against the quiet cervix, the latter soon yields. However, the dilatation of the cervix is so violent and sudden that it becomes paralyzed and remains patent, patulous, after the fetal ball has been forced through the cervix. It will require 2 to 4 days for the paralyzed cervix to recover and close its canal, but during that time the patent cervix serves as an open door through which infectious germs pass into the uterine cavity. After the germs have entered, the cervix recovers from its paralysis, and closes its canal with its natural vigour, which prevents free drainage, and the multiplying germs pass through the oviducts into the peritoneum. Hence, drainage which is ample in labour, its lack is the essential element of danger in abortion.With a comprehensive view of the kinds of nerves (sympathetic and spinal) supplying the uterus and their function (rhythmical and non-rhythmical), the physician is better capable of administering successful treatment. **The genitals possess the largest nerve supply among viscera and, therefore, we may expect the greatest amount of neurosis from pathologic conditions arising from them.**

The essential pathology of the sympathetic nerve in health and disease is through reflex action. The reflex action from the genitals may disturb any one or all other viscera, as to function (peristalsis, absorption and secretion) or structure.

The reflex action may compromise circulation (congestion or anemia), as regards the blood or lymph, and, consequently, assimilation.

When an adult female is suffering from reflex troubles the cause is generally found in the tractus genitalis.

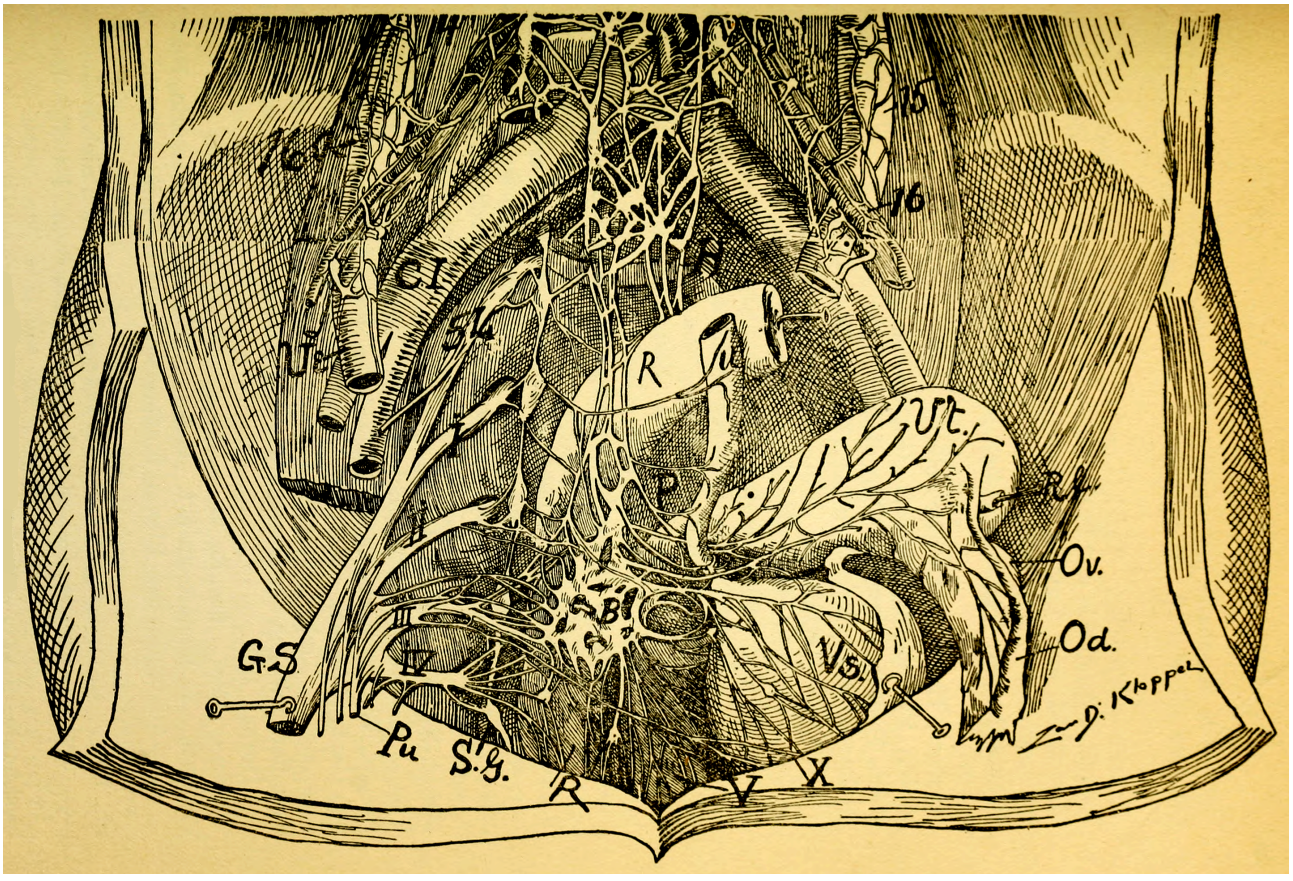
Reflex action travels on definite nerve tracts, and is reorganized in definite nerve ganglia (centers).

Nerve forces travel with most facility on lines of least resistance, which will be nerve plexuses containing the greatest number of nerve strands and ganglia; therefore, genital reflexes will pass first directly over the hypogastric plexus to the abdominal brain, whence reorganization will emit it next to the stomach, for the gastric plexus has a large number of nerve strands and ganglia.

Consequently, women in reflex disturbances complain first of stomach troubles.

The pelvic brain involves matters important to the science and practice of medicine.

The dynamics of obstetrics is involved in the pelvic brain: The Cervico-Uterine Ganglion.



"(B) represents the pelvic brain. The plexus aorticus extends from the abdominal brain to the aortic bifurcation or interiliac disc (H). The plexus interiliacus (hypogastricus) extends from the interiliac disc (H) to the pelvic brain (B). It is evident that the pelvic brain is the result of the coalescence of the plexus interiliacus and sacral nerves II, III and IV. Note that part of the plexus interiliacus sends nerve cords directly to the uterus. 16a and 16 is the arterio-ureteral crossing. The ureters were dilated. Note the great vesical nerve extending from III to X. In this drawing suggestions from Frankenhauser were employed."

It must explain the normal and anomalous pains (peristalsis) of the uterus.

The pelvic brain must explain the initiation and parturition (labour), its maintenance (continuous rhythm), and cessation. For the science of uterine peristalis, its beginning, continuing and ending, the pelvic brain (and the automatic menstrual ganglia) must be studied.

It is time we realize that the genital circulation, in its different phases of pueritas (quiescent), pubertas (congestion), menstruation (engorgement), gestation (engorgement), climacterium (irregular congestion), and senescence (quiescence, anaemia, atrophy).

A knowledge of the nervous system of the genital tract is not valuable for the science of obstetrics and gynaecology alone, but it is important for successful practice.

For long centuries though the stately, periodic, peristalsis "labour pains" had excited the wonder of all observers, yet until the last half century little of practical value had been established as to the nerves of the genitals.

The work of Franz Kilian (1800-1863) on "The Nerves of the Uterus", issued in 1851, was the foundation of almost all subsequent labours. Kilian was an obstetrician and attempted, in a philosophical method, to solve the problem which nerves and from what source is the uterus influenced.

From Kilian well-known investigations modern books have copied, with and without acknowledgement.

Toward the end of gestation the cervix becomes more and more effaced.

This anatomic fact exposes the pelvic brain to trauma (pressure) from the child, especially its head, which gradually excites, or irritates, the pelvic brain, arousing uterine peristalsis, which is finally increased to expulsion, or labour pains." - Dr Byron Robinson, MD, Chicago Illinois, in "The Medical Brief", July 1905.

Chapter 18

The Heart

"Heart failure patients had a higher burden of pre-existing comorbidities. Heart failure is a common disorder in developed countries, with an estimated prevalence of 1% - 2%. The mortality and the morbidity burden of Heart failure is high. Recent studies have noted an increase in incidence rates of Heart failure in young individuals over the last few decades. Overall, comorbidities were more prevalent amongst the elderly compared to the younger Heart failure population. For all 3 Heart failure age groups, the most frequent health care contact was for cardiovascular causes, followed by rheumatology and gastroenterology, but the proportion of patients with these types of contacts increased with age. For young and middle-aged controls, rheumatology was the most frequent health care contact, followed by urology and gastroenterology in the young, and cardiovascular causes and gastroenterology in the middle-aged. For elderly controls, cardiovascular causes were the most frequent." - M. N. Christiansen, in "Preheart failure comorbidities and impact on prognosis in heart failure patients: a nationwide study", Journal of Internal Medicine, February 2020.

The Cardiovascular Apparatus

"A mechanistic concept of the cardiovascular apparatus may be outlined as follows:

The circulating mechanism consists of a Pump, The Heart, and 3 Reservoirs:

1. High-Pressure Reservoir: The Arterial.
2. Low-Pressure Reservoir: The Venous.
3. Negative-Pressure Reservoir: The Lymphatics.

The high (arterial) and the low (venous), are connected by tubes of decreasing size:

1. Arteries.
2. Veins.
3. Arterioles.
4. Venules.
5. Capillaries.

Pressure in the arterial reservoir depends on the ability of the heart to pump into the reservoir more rapidly than the blood can escape through small openings which connect with the venous (low-pressure) reservoir.

The size of these outlets is controlled by nerve-centres acting upon the muscular walls of smaller arteries, whereby they are made to dilate or contract as needs of the body vary.

When peripheral vessels, arteries, capillaries, contract, the blood escapes into them less rapidly and the heart-power is manifested as counter-pressure, and the vascular pressure rises so long as the heart can put forth energy enough to sustain action.

The slow, deliberate action of lymph-propulsion exerts a valuable effect on the work of absorption, transudation, diffusion, dialysis, chemotaxis, and the like, and nobly supplements the major circulation by compensating the effects of high or low tension.

The heart and vessels; may be considered as one organ, the vessels acting as ramifying branches of the heart, existing throughout the body.

Influences which affect the heart also affect the vessels.

From the standpoint of chronic cardiovascular disease, hydrostatic conditions may be divided into variations of:

1. Low Pressure.
2. High Pressure.
3. Secondary Pressure.

In low-pressure conditions, the fault is chiefly in the heart - the pump - **which is weak from some cause.**

The difficulty may lie in the valves (stenosis or insufficiency), **the muscle (inflammation or degeneration)**, or a generally crippled state due to **pericardial inflammation;** thereupon normal arterial pressure (hydrostatic equilibrium) cannot be maintained in the arterial reservoir.

In high-pressure conditions the trouble is a disorder of the arteries, generally the smaller ones. There are also changes in the lumen of the vessels; **also psychic factors, toxaemias, etc.**, inducing arterial spasm, which must be evaluated.

In brief, the circulation in the highest animals may be regarded as based on 5 primary groups of principles:

1. The mechanical arrangements.
2. The chemical changes by which it is maintained.
3. Its modifications by glandular secretions.
4. Its regulation by nervous agencies.
5. Adaptation and compensation along the whole line of activities, rest, — in short, environment." - Dr J. Madison Taylor, MD, in "International Clinics", 1914.

The Prevention of Arteriosclerosis and Heart Disease

"The victims of heart disease, go for months and years without intelligent treatment because no one has pointed out the danger-signals and because the interest, in germ disease has absorbed every one's attention.

Heart disease and hardening of the arteries in 9 times out of 10 are, due to disturbances of the chemistry of the body.

The prevention of heart disease and hardening of the arteries must he accomplished by a proper regulation of the chemistry of the body, particularly that pertaining to the intestines and the liver.

This is accomplished through diet, rest and exercise, and the limitation of nervous strain, than which nothing is more potent to upset the bodily chemistry.

The truth is found in the ultimate chemistry of food substances and their changes in the human body.

The tendency to heart disease in otherwise healthy individuals can better be detected by a chemical examination of the urine than by an examination of the heart itself. By the time the heart itself shows poisoning, as appreciated by the sufferer because of palpitation, pain or shortness of breath, irretrievable damage has been done, and the chemical vice has become so deeply seated that an extreme regimen is necessary, **while in the early stages a slight modification of diet and hygiene can check the trouble.**

Fortunate is the subject of these changes if the disturbing chemistry of the body leads to pronounced suffering in the direction of recurrent headache, biliousness or dyspepsia before the heart and blood-vessels are damaged.

Most cases of cardiovascular disease are instances of chronic amino-acid poisoning by acids to which the tissues of the individual are sensitive, and that the condition known as intestinal putrefaction has an important bearing on the matter, though it does not seem to me that it is so straightforward an instance of bacterial disease as many at the present time maintain.

Heart disease seems to me often to develop as a result of damage done by some material derived from food in which the person is idiosyncratic.

The damage also often comes about gradually without, disagreeable symptoms.

The early signs of heart disease are the early sign-of amino-acid poisoning, or amino-acid toxicardia namely, disturbances of heart action, in the form of rapidity or premature contractions, and a sense of oppression, pain over the heart, shortness of breath on exertion and poor circulation.

A similar poison may attack the nerves and canst neurasthenia or recurrent headaches.

The combination of headaches and palpitation is quite common.

These symptoms have often been described as dyspepsia (indigestion), without any definite idea as to what was meant by the term.

Dyspepsia in itself hardly ever affects the heart: **It is the product of a wrong chemistry of the protein food that does this.**

Natural Development of Heart Disease

The study of many thousands of specimens and of a great number of patients leads me to the belief that the natural course of the development of heart disease is as follows: At first the patient has no symptoms. Heart disease in its early stages has no symptoms, no acidity of the stomach, no constipation nothing.

The first thing that is noticed, if there is an accidental examination of the urine, is the presence of indican or the derivatives of Skatol or Phenol, one or all of the putrefaction group.

The patient has no symptoms until one of several things happens.

After a long time the patient may have an attack of hemiplegia, or quite early he may nave an attack of neurasthenia (for intestinal putrefaction affects the nerves); then the condition is recognized.

If he happens lo escape nervous symptoms, he goes on for a good many years, perhaps excreting indican (which is the index of various toxins).

After a while the excretion of these products through the kidneys damages them.

The blood vessels are not affected so much directly but indirectly through the kidneys, which are damaged and unable to do their work except with additional blood-pressure; so when the kidneys are unable to do their work properly, blood-pressure is raised.

It is a compensatory phenomenon.

When the blood-pressure is raised, the heart becomes hypertrophied to keep up the blood-pressure more easily, and the blood-vessels themselves become hypertrophied for the same reason.

We have at first the hypertrophy of the blood-vessels and later the deposit of fibrous tissue.

I should say that in the early stages of this condition, when the toxic elements are active though excreted, and the structural changes have not taken place in the kidneys enough to increase blood-pressure, **these patients have low blood-pressure because of the disturbance of the tone of the heart muscle, and the muscular elements of the blood-vessels.**

The moment the kidneys become at all incompetent, there is a tendency to high blood pressure.

Thus we have a vicious circle - the hypertrophied heart and blood-vessels and the damaged kidneys.

The kidneys and blood-vessels are progressively damaged, and at the end of 25 or 30 years the patient, who started with indicanuria, has a typical case of disease, with Bright's hypertrophied heart and blood-vessels, and liability to terminal apoplexy, uremia or cardiac dilatation. **This is the natural history of a case of heart disease.**

Prevention of Arteriosclerosis

The importance of intestinal putrefaction has been dwelt on by many writers, and is no doubt a long step in the right direction.

I now believe in and advocate the few protein diet, which seems to justify itself by the results I have observed.

It is founded on the belief that heart disease is not caused by a high protein diet as such, hut by the action of some amino-acid or acids derived from some particular protein food or foods to which the individual attacked is idiosyncratic.

I believe, as mentioned above, that conscious poisoning of many individuals by particular protein derivatives points in this direction.

So a person eating the great variety of protein foods found in a modern dietary is laying himself open to the attack of many different kinds of amino-acids, any one of which may be the one which is to do him harm. If he cuts out one-half of his proteins, he is by that much safer. If he is willing to do with a single protein, he is almost certain, on the theory of chances, to escape that which will do him damage.

The prevention of heart disease in otherwise healthy persons is a matter of dietetic management and the avoidance of all those things which may upset the chemistry of the body.

The chemistry of the body can be upset by nerve strain, anxiety and stress; it can be upset by the abuse of drugs; it can be profoundly upset by accidental food poisoning or a severe attack of malaria, dysentery or fever. Nor should we forget the necessity of rest and exercise.

Conclusions

I would like lo emphasize the analogy between the universally recognized idiosyncrasy of some individuals to particular articles of protein food that produce in them symptoms of pain, and the unconscious idiosyncrasy of many others to amino-acids which produce damage without conscious symptoms." - Dr Louis Faugeres Bishop, MD, Clinical Professor of Heart and Circulatory Diseases, Fordham University School of Medicine, New York in "JAMA", 15 March 1913.

The Care of Cardiac Conditions

"Excessive hypertrophy is best avoided by a regular hygienic life and by systematically watching for any cause which might increase the burden of the circulation, and removing it by treating the cause, or if that is not possible by the systematic use of arterial dilators.

Dilatation is that condition which the heart reaches when struggling under the burden of a circulation it can no longer maintain on account of the weakened myocardium. Instead of a firm contraction almost emptying the heart at each stroke, the systoles only partially expel the blood, and symptoms of impaired circulation are immediately evident.

Dilatation is usually gradually established, occurring at intervals, for a time from a sufficient cause, and then perhaps disappearing.

However, cases of acute dilatation, even in those previously unaffected by cardiac disease, are not at all uncommon.

This gradual onset of dilatation is commonly brought about by overwork, anxiety, long continued excitement, intercurrent disease, or some other cause of increased cardiac strain.

The question of exercise is important and interesting.

Judicious exercise may bring about compensation, and prolong the period of its existence, and the deference of that time when the cardiac lesion will overbalance the power of the myocardium.

The patient who leads a sedentary indolent life develops very soon the lung effects of passive congestion. The blood stasis, due to the poor heart performance, is augmented by the physical stagnation which follows insufficient exercise.

Thus we see early developed in these patients chronic gastritis, constipation and the train of symptoms best described as biliousness. They take cold easily and there is quickly established a chronic catarrhal tendency in the respiratory passages. For these patients systematic out-door exercise in spite of their permanent cardiac lesion is of enormous advantage. The form of exercise must be such as will be of interest to the patient, otherwise persons of this disposition will never persist in carrying it out. The patient should be instructed as to the principles involved, that is, that the exercise should be carried on slowly, systematically and never to the point of producing dyspnea, and never under any circumstances must competitions of strength or speed be entered into.

In connection with exercise massage should be mentioned.

It has been happily defined as a process in which the operator takes the exercise and the patient receives the benefit.

The use of Hydrotherapy to improve the general nutrition and circulation is something worthy of attention.

The effect of a warm bath upon congested organs accompanied by gentle rubbing and followed by a period of rest in a recumbent position can not but be beneficial when carried out under proper precautions.

The importance of the care of the skin aside from any special system in chronic cardiac disease is very great. The value of bathing, it improves the nutrition of the skin and stimulates its action and the tone of the general circulation.

In the treatment of chronic cases the use of iron is of great value.

The tendency to anemia which exists in all chronic diseases.

Sometimes dyspnea (shortness of breath) is entirely relieved when the impoverished blood is brought up more nearly to par.

The alimentary system must receive very careful attention.

The tendency of passive congestion to produce damage is very much increased by any functional derangement.

Constipation is a very great evil in these cases, and regularity of this function should be absolutely insisted upon.

The use it has not been so satisfactory as digitalis. use of drugs during the quiescent period must to a large extent be the drugs which we are pleased to call "hygienic" drugs, namely tonics, laxatives, and occasionally alteratives.

That mysterious force, or rather storehouse, which we call latent energy, can not be fathomed and its capacity estimated with any degree of certainty.

We have all of us seen patients who had apparently reached a state where compensation seemed impossible, gradually climb to a state of fair health and comfort.

In emphasizing the importance of hygiene in the management of cardiac disease during the quiescent period there is no stronger warning than that a recurrence of valvular inflammation is sure, by extension as well as by overwork, to involve the heart muscle in a secondary degeneration.

Anti-rheumatic treatment should be instituted whenever any return of inflammation is feared, and the case should, for a short time at least, be managed with absolute rest, and the diet suitable to the inflammatory stage.

Our prime object is to keep nutrition of the heart as good as possible, and by this we mean the avoidance of degeneration and the avoidance of excessive hypertrophy. The nervous mechanism of the heart, as representing the conservator of heart energy, must be treated with consideration." - Dr Louis Faugeres Bishop, MD in "JAMA", 27 June 1896.

Chapter 19

The Circulation of the Blood

"For the life of the flesh is in the blood" *- Leviticus 17:11*

"Before a disease can manifest itself, the blood must, prior to this taking place, have had its normal healthy condition interfered with by one cause or another. This may have depended upon some morbid influence either internal or external to the economy. Always bear in mind, therefore, that the way to ward off disease is to keep the blood pure, no matter what the malady is: Pneumonia, Gout, Rheumatism, or even Toothache." *- Dr Robert Bell, MD in "How to fight Influenza and Allied Diseases", 1899.*

"It cannot be too strongly emphasised that the recovery from a large number of illnesses, whether specially treated or not, is due to a re-establishment of an increased resistance in the patient's blood and tissue fluids. The necessary improved quality of the blood and tissue fluids can be promoted by many factors. Nature effects the recoveries under the favouring influence of the removal of a number of factors which were detrimental to her activities." *- Dr Chalmers Watson, MD, Physician, Royal Infirmary, Edinburgh in "Journal of Mental Sciences", October 1923.*

A drop of blood can clearly show the present status of health of an individual, and can tell the story of what has been happening with his dietary habits in the last 7 years.

The Emunctory System and The Purpose it Serves

"The grand source from which are derived the materials of the body's is the blood. It becomes a matter of great moment that this vital fluid be preserved in a state of purity, and adapted for the great purpose of supply of the various tissues, and for the purposes of life and organization.

A wrong condition of the blood, by the retention of any matters which ought to be continually removed, becomes rapidly injurious and even fatal to life.

Excretion is the great depurating process of the blood.

Firstly, that of the lungs cannot be at all suspended without the worst consequences, which are immediately experienced.

The carbon of the venous blood, which ought to be extracted by its combination with oxygen of the atmospheric air inhaled, quickly accumulates, and mixes with the arterial blood 1 minute or 2 the arterial blood becomes venous, and being carried to the brain, sensibility is first destroyed; then the heart ceases to act, and death ensues.

Such is the case in death by hanging, and drowning, and all similar means by which the function of respiration and decarbonization is interrupted.

If the excretion of bile by the liver be stopped, it soon accumulates in the blood, and its deadly properties are experienced in the extreme depression

of nervous power. If the usual excretion be not soon re-established, insensibility and death will supervene.

If the excretion of urea by the function of the kidneys be interrupted for a short time, the blood is thereby rendered putrescent; and very soon the most malignant fever destroys the individual; coma, or stupor, and death are the result of its retention in the vital fluid.

This is occasionally seen in the course of certain diseases, and becomes the cause of their fatal termination.

Further, in regard to the excretion of the skin, the internal and external covering of the body, that is, the skin and the mucous membrane of the mouth and intestinal canal, are identical in structure and character; and that the whole difference of their appearance is owing to their difference of position.

Hence the close sympathy between them.

When the excretion of the skin is suppressed, the internal organs suffer immediately.

As to the excretions of the intestinal canal, and the very injurious effects of their suppression, I need not inform you.

Such is the importance of a constant and due action of the bowels.

When the function of excretion, by the different organs for the purpose, is duly performed, all is well with the human body.

The blood continues pure and healthful in its influence on every organ, and is suitable for the great purposes of life.

When all is, healthful and well with the body, and only then, does it become the suitable tenement and the efficient organ of the soul, to obey its high behests, and to answer its great purpose of devotedness to the service of the infinite and adorable Creator.

Remember the imperative necessity of preserving the health and vigour of your body, if you wish fully to enjoy the only happiness to be found on earth, the happiness of a life devoted to the glory of God." - John Smedley in "Practical Hydropathy", 1870.

The Circulatory System

"There is an old saying that **"a man is as old as his arteries".**

This is true, for when the arteries deteriorate, the body does the same; if the important arteries give way, the body dies.

The blood stream is the transportation system of the body. It brings food, water and oxygen to every part, from the scalp to the toes. It carries away the waste from all parts of the body, and delivers it to the skin, lungs, kidneys and bowels to be excreted.

If the blood supply in any part of the system fails, that part dies.

If a large enough part in a vital organ degenerates, the whole body dies.

Practically everything that goes into the making of the body has to enter the blood stream before it can be made a part of the body. The blood absorbs water and food and oxygen the constituents from which the body is built and distributes them where ever they are needed.

So long as this distribution is balanced, and the waste is removed, there is perfect health.

One of the essentials of health is an effective circulatory system, well supplied with highly vitalized, pure blood.

The arteries and veins must be in good condition or the blood can not freely circulate.

Back of the arteries and the veins there must be a strong, steady, effective heart; and back of the heart there must be a sound digestive apparatus furnished with food and drink of good quality.

The vast majority are born with a good circulatory system, and it is easy to keep it in good condition. Through abuse diseases of the heart and arteries develop.

Before considering the diseases of the heart and arteries, let us briefly view the healthy circulatory system. This system is composed of the heart, the arteries, the capillaries and the veins.

The heart is the great pump of the body.

The left side of the heart forces the blood into the arteries and the arteries distribute it to every part of the body; in its journey the blood gives away good food and oxygen; when it is deprived of its life-giving substances the blood is gathered up by tiny vessels which conduct it to the veins; the veins take it to the right side of the heart, which pumps the blood to the lungs, where it gives off poisonous gases and receives oxygen in return. Now it is again pure arterial blood and is returned to the left side of the heart.

There the circuit just described begins all over again. If the heart stops beating for a few minutes it is difficult to start it again.

Complete blood stagnation means death, for the blood carries the necessities of life to all parts of the body, and removes the poisonous wastes.

Anything that causes deterioration of the body may cause disease of the organs of circulation". - Dr Alsaker, Rasmus Larssen, MD in "Curing diseases of Heart and Arteries", 1918.

Circulatory System

For the Emunctologists the circulatory system is the Blood Supply including the Lymphatic and Emunctories Circulation.

The Circulatory System has an effect on the:

1. Blood Supply: The Bloodstream if contaminated with Toxic Metabolic waste (poisons) it affects all the (organs where by) it passes in their functioning.

When the organs are affected, these in turn affect the body glands.

This is also called Metabolic syndrome, which increases the chances of developing heart disease, stroke, and diabetes.

Thus the removal of any toxic waste from the bloodstream is vital, and for this purpose (to continuously cleansing the blood) the Circulatory System, has part of its component the Lymphatic and Emunctory Circulation.

2. Lymph Circulation.

3. Emunctory Circulation.

Effect of Poisons in the Circulatory System

Poisons in the body from improper elimination through the kidney make for adverse effects upon the circulatory system. This makes for disturbances in other portions of the system sympathetically.

The circulatory system as related to the blood and lymph supply in the organs of the pancreas, liver, kidneys, lungs, spleen and heart.

Thus if the blood supply becomes toxic, this then as a consequence, results in disturbances: among other things it may increase or slows circulation through the body. Toxicity in the blood does also affects: the glandular secretions and lymphatic system. If allowed to continue it can bring disturbances to all organs of the body on which it circulates and finds its presence, specially upon the organs of the central circulatory system: Heart (the activity become irregular), Liver, Lungs and Kidneys, all these are then affected in their functioning.

The Colon in Relation to the Blood Supply

"The colon is supplied by branches from the superior and inferior mesenteric arteries while the rectum is supplied by the middle hemorrhoidal, from the internal iliac and by the inferior hemorrhoidal artery.

The returning blood of the large intestine flows into the portal vein through the superior mesenteric and inferior mesenteric veins. At the rectum a communication is set up between the systemic vein and the portal system of veins.

Some of the blood from this part (the rectum) flows directly to the internal iliac veins and does not return through the portal vein.

There are 4 Coats:
1. Serous
2. Muscular
3. Mucous
4. Submucous

The serous coat is formed by the peritoneum; the muscular by the circular and longitudinal muscle layers, the longitudinal being external; the mucous membrane is separated from the muscular layer by the submucous layer. It has no villi and no valvulae conniventes.

Physiology

Both intestinal juices and unabsorbed food are subjected, particularly in the large intestine, to the decomposing action of myriads of bacteria, and the products formed are of the greatest importance. **Many of them are Toxic, producing Headache, Drowsiness, or at times Irritability or Depression and Anaemia.**

The toxic substances are derived chiefly from proteid putrefaction — the carbohydrates being decomposed by fermentation. It has been estimated that the average weight of dried faeces passed per day is 15-25 gms., and that of this amount 4-5 gms, consist of bacterial bodies. Carbohydrates are decomposed chiefly into CO2 H2 CH4, and N2, lactic acid and alcohol. The last 2 are reabsorbed and burned up by the metabolic processes. Fats are saponified by the action of the bile and pancreatic juices, but fat globules are often found in faeces.

The Decomposition of Proteins

The amino acids which are the result of enzyme action and which are assimilated by the body for replacement of tissue wear and for growth are attacked by bacteria and broken down into toxic substances such as:

1. Phenol
2. Cresol
3. Indol
4. Skatol
5. Hydrogen Sulphide

These Products When Reabsorbed Are Detrimental to the Living Organism; and Produce:

1. Nausea
2. Vomiting
3. Diarrhoea
4. Headache
5. Mental Disturbance in varying degrees

These products produced by the attack of bacteria upon the amino acids are made chiefly in the absence of carbohydrates, for it has been found that when carbohydrates are present they do not decompose the amino acids.

It is only in the absence of carbohydrates that the bacteria work on proteins.

When peristaltic action is delayed, thereby prolonging the evacuation time of the large bowel, we find an indication for Colonic Irrigation.

Food normally begins to enter the colon in about 4 hours after ingestion and the meal passes completely into the large bowel in about 6 hours.

There it remains for from 10 hours to 48 hours.

The absorbing powers of the large bowel are very great, products formed there entering the blood stream if not detoxicated by the liver, they are excreted by the urine, perspiration and breath.

At the Gardner State Colony, Treatment of Mental Patients by Colonic Irrigation, in our experience eases of manic depressive psychosis experiencing a manic episode show a quicker return to normal mentality when the colon is kept well irrigated.

This we attribute to 3 factors:

1. Removal of toxic products from the colon,
2. Relief of the dehydrated condition of the tissues,
3. Relief of acidosis.

Most manic depressive cases are constipated, dehydrated and acidotic to a varying degree from semi-starvation due to neglect previous to admission.

We have noted that a fall in blood pressure takes place concomitantly with a return to normal mental stability but that, a rise in blood pressure subsequently does not provoke a psychotic episode.

Dementia praecox (schizophrenia) patients are certainly quieter and cleaner under this type of treatment.

Other types of mental disorder show improvement in mental and physical health.

This fall in blood pressure is not prolonged, as it rises within 24 hours to its former height.

However, after a period of daily Colon Irrigation a gradual fall of the systolic pressure takes place until that pressure is maintained at about 20 to 40 mm. of mercury below the former high blood pressure.

This drop in the blood pressure obtained during the first Irrigation suggests that eases of hypertension with cerebral haemorrhage and cases of Eclampsia might be helped by the judicious application of this treatment." - Dr Harold K. Marshall, MD, Assistant Physician, Gardner State Colony, Department of Mental Diseases, and Dr Charles E. Thompson, MD, Superintendent, Gardner State Colony, in "New England Journal of Medicine", 8 Sept. 1932.

Treatment of Eclampsia

"Rudaux (La Clin., 17 April 1908) writes that **any treatment undertaken for eclampsia must be directed first against the toxic condition of the patient**, and secondly against the convulsions and coma which are due to the action of the toxins upon the central nervous system. Eclamptic crises are usually preceded by the symptoms of auto-intoxication, vomiting, ptyalism (overproduction of saliva), neuralgia, and most frequently by albuminuria.

Prophylactic treatment requires the patient to submit to a proper hygienic regimen. When there is albuminuria with general auto-intoxication, a milk diet must be insisted upon with the use of water. A daily action of bowels is essential." - in "The British Medical Journal", 4 July 1908.

Principles of Treatment in Puerperal Eclampsia

"Potter in "American Journal of Obstetrics and Diseases of Women and Children, November 1897", after practical experience, advocates principles that may be grouped under the following heads:

1. It depends on Toxaemia due to over-production of toxins and under-elimination by the Emunctories.

2. These Toxins probably have their origin in the ingesta, in intestinal putrefaction, in foetal metabolism, one or all. There is coexisting sluggishness, impairment, or suspension of elimination.

3. When the symptoms of Eclampsia appear the kidney should be interrogated as to its functions.

4. Treatment is (a) Preventive, and (b) Curative.

5. Milk diet and Water should be given in the pre-eclamptic stage to dilute the poisons hasten its elimination, and nourish the patient.

6 Eclampsia is an expression of a further maternal intolerance of the foetus; hence, as a primal foetus the uterus should be speedily emptied of its contents.

7. Medicinal treatment alone is delusive, and, when relied upon exclusively, is fraught with danger both maternal and foetal. In the prompt induction of labour is found a rational application of science to a desperate condition." - in "The British Medical Journal", 4 December 1897.

> ***"Circulating toxic materials tend to settle in the areas of the body farthest from the heart because the circulation is poorest there. The Toxins often affect the joints in the arms, legs, feet, and hands. Arthritics usually complain of pain and stiffness in the extremities. The Bowel is the king of the 5 main Organs of Elimination, it is the hub of the Digestive System.*** *The bowel is one of the largest structures in the body, taking up more room than any other internal structure." - Dr Bernard Jensen, DC, in "Guide to Better Bowel Care", 1999.*

The State of the Blood in a Causative Relation to Several Functional Disorders

"Are the pathological and causative conditions seated in the blood or in the nervous system, or in both?

This question we may hope to answer when the physiologist has explained more fully the mysteries of the capillary circulation and of nutrition.

Functional disorders involve, for the most part, morbid conditions of the nervous system. And these, when not produced directly by over-exercise or over-excitation, generally involve a prior abnormal state of the blood. This is a capital fact as regards therapeutical indications.

The nervous system, as a generator of force, is powerless, and all its vital functions are speedily lost, without the presence of oxygenated blood. How quickly are the power of willing, the faculty of feeling, and consciousness suspended by the deficient supply of blood to the brain in syncope!

The blood is the medium, on which the nervous system is as dependent for the capacity to perform its functions, as the body on the atmosphere for the continuance of life. It is not strange, therefore, that deviations from the normal composition of the blood should occasion disturbance of the functions of the nervous system.

An impoverished state of the blood stands in a causative relation to various functional disorders.

Clinical experience teaches that most of the neuroses, together with various disorders, such as palpitation, dyspepsia, constipation, etc., are often associated with anaemia, and disappear when the blood is restored to its normal condition.

It is a general principle, then, in the management of functional disorders, to direct attention to the state of the blood.

Moreover, we have already acquired knowledge of certain forms of toxaemia, occurring as results of morbid actions within the organism.

We know that urea accumulating in the blood acts as a poison on the nervous centres, giving rise to epileptiform convulsions and fatal coma.

The highest aim of conservative medicine in all affections involving toxaemia from morbid actions within the body is expressed in the foregoing sentence:

It is to obviate the production of the poisons. But first of all, the sources of toxaemia must be ascertained and the conditions under which its different forms are produced.

The aims of conservatism, next in importance to the one just stated, are, knowing the nature of different poisons, together with the means of their expulsion from the body, and recognizing their existence in the blood as early as possible, to effect either their neutralization or elimination." - Austin Flint, MD, Professor of the Principles and Practice of Medicine, Bellevue Hospital Medical College, Long Island College Hospital, in "Conservative Medicine as applied to Therapeutics", The American Journal of Medical Sciences, 1863.

Blood Picture of Autointoxication

"Dr G. H. Hoxie, AM, MD confesses that he is an adherent of the belief that autointoxication from the intestinal tract is a possibility and in fact a fairly frequent occurrence.

The causes of colonic stasis may be bands, adhesions, pericolitic membranes, kinks, or splanchnoptosis, but the resulting symptoms appear approximately stable. The patients are nervous and depressed.

Dirty discolorations of the skin appear, especially about the eyes and neck, in the axillary folds, and where the skin has an abundance of loose connective tissue underlying it. The appetite may be ravenous. Headache is generally present, and backache with periodical or intermittent abdominal pain.

The colon, seems usually distended and tender.

The urine shows indicanuria and an excess of phenols. The blood picture shows normal red cell count and high percentage of hemoglobin.

The white corpuscles are normal in number (usually 9,000 or under).

There is a diminution in the number of polymorphonuclears (usually below 70%), and a corresponding in crease of lymphocytes.

Of the latter, the larger forms with angular nuclei and wide sustained horders are most frequent. The mast cells are infrequent.

The ripe eosinophiles are about normal, and in some specimens there are many polymorphonuclears with oxyphilic granules.

The platelets are diminished in number.

With Wright's stain, the multinuclears show an increased proportion of cells containing large ambophilic granules, which give a dark appearance to the protoplasm.

The granules are large and purplish and lie in a mauve cytoplasm.

As the patient gets rid of the toxins the proportion of these heavily staining cells decreases, by which the degree of intoxication may be estimated quite closely.

This blood picture may be an aid in differentiating appendicitis and other intra-abdominal inflammations." - in "New York Medical Journal", Vol.95, 1912.

The Blood-Picture of the Auto-intoxication Due to Chronic Colonic Stasis

"During the past year I have had the opportunity of studying the blood of many patients applying for treatment for obscure abdominal pains and I have been struck by the uniformity of the findings in the cases in which auto-intoxication from colonic stasis lay at the bottom of the trouble.

This has led me to become an adherent of the school which believes that auto-intoxication from the intestinal tract is a possibility and in fact a fairly frequent occurrence.

While the cause of the colonic stasis may be various: bands, adhesions, pericolitic membranes, kinks, splanchnoptosis, nevertheless, the resulting symptoms, when the toxins finally break through the various bodily defences,

appear approximately stable, The patients arc nervous and depressed.

The skin shows dirty discolorations, especially about the eves, about the neck, in the axillary folds, and where the skin has much loose connective tissue under it.

The appetite may be ravenous. There is usually some headache.

And then there is usually backache with periodic or intermittent pain in the abdomen. The colon seems usually distended and tender.

The urine shows indicanuria and an excess of phenols.

The blood-picture in general is the following:

Hemoglobin is high, with normal red-cell count. The whites also run within normal limits; usually under or about 9,000. The number of polymorphonuclears is low, usually below 70%.

The lymphocytes arc correspondingly increased.

Of these the larger forms with angular nuclei and wide unstained borders are in the great majority. The mast-cells are infrequent. The ripe eosinophils are about normal. In some specimens one finds many polymorphonuclears with oxyphilic granules. The platelets seem reduced in number.

When studied with Wright's stain, the polynuclcars show an increase in the proportion of cells showing large ambophilic granules, so much so that the observer is struck with the “dark” appearance of the protoplasm. That is, the granules are large and purplish and seem to lie in a mauve cytoplasm.

The proportion of these heavily staining cells decreases as the patient gets rid of the toxins. Hence, one can estimate rather closely how intoxicated the patient is by the proportion of these dark cells to the total number of polynuclears.

A few case histories may make my findings clearer:

Case 1. Patient. — J. H D., aged 52. In 1805, be had an attack of pain in the calf of the left leg, with similar but lighter pain in the right iliac fossa. He lost flesh, but after much varying treatment, lie managed to return to his work after several months of illness. He was not entirely well until 1901, when his appendix (which was only slightly clubbed) was removed and the cecal adhesions broken up.

For 6 months after the operation he was constipated, but thereafter for 2 or 3 years was free not only of the constipation but also of the neuritic pains.

In the winter months, however, he had been troubled nearly every year since 1905 with “sciatica.”

He sought treatment on account of a "sciatica" of 2 months standing, wherein the pain shifted from the thigh to the calf, he was constipated with ravenous appetite, bad taste in the mouth mornings, irritable; slept well except for pains.

Examination: The nose was slightly congested. The heart presented a slight presystolic bruit, loudest under the xyphoid.

Blood-pressure: right 135, left 145. The stomach was dilated, reaching 2 inches below naval. Rectal mucosa showed capillary hemorrhagic areas. Urine 1.010, neutral, some indican.

Blood: hemoglobin 100, reds 5,500,000, whites 9,800, polynuclears 67, large lymphocytes 14, small lymphocytes 16, other mononuclears 2, eosinophils 1.

Nuclei lilac in about one-half the cells. The polynuclears showed dark blue and purplish granules in mauve cytoplasm (granules thickly set). The lymphocytes had wide unstained border in most cases. We have here, evidently, a patient with adhesions or bands so constricting the intestines as to prevent normal peristalsis.

The operation for appendicitis accidentally helped the situation for a time.

But now the patient is absorbing toxins and during the cold weather fails to excrete them sufficiently to keep oil the toxic neuritis. That this is the true explanation is evidenced by the failure of nil sorts of therapy aimed at the symptom by the many able physicians whom be consulted.

Treatment, and Course of Disease: After 5 days of exclusive milk diet with cathartics and the application of bent to the leg the blood-picture showed hemoglobin 90, reds 5,264,000, whites 10,000, polynuclears 66%, eosinophils 1%, large lymphocytes 26%, small lymphocytes 3%, mononuelears 3%, mast-cells 1%, transitionals 18%. Nuclei were refractory; of the polynuclear granules not quite half were dark. The patient was feeling better. Four days later the neuritis showed in only 1 or 2 sore spots and the blood showed hemoglobin 90, whites 9,600, polynuclears 65%, eosinophils 1%, large lymphocytes 27%, small lymphocytes 1%, transitionals 40 (including many indefinite forms that might be degenerate instead of immature). Nuclei were refractory; granules of polynuclears showed only 21%, of "dark" forms. Stools were now liquid and inoffensive.

Case 2: Patient.—M. T., a girl aged 16, was admitted, complaining of pain in appendiceal region; not very severe. Present illness started about a year previously as a dull pain in the iliac region; pain increased after exercise; for previous three weeks she had had constant pain; the region was painful on pressure. Patient was quite constipated.

Examinations: Urinalysls, 13 July 1909: Acid, straw-yellow, aromatic odor, slightly cloudy, specific gravity 1.027, pus-cells, epithelium (a good many squamous) deposits, quite a sediment, floceular precipitate.

Treatment and Course of Disease: The appendix was removed. Patient was discharged as cured 29 July 1909. 9 March 1912, patient appeared again, stating that the pains for which she had had the operation had returned lifter a few

months absence. She felt "cross"; could not do her university work. Her back was weak; no headache. She had tremor on fatigue; the pains appeared in right side especially after exercise or when stretching, or during the occasional attacks of diarrhea. Appetite and digestion good; bowels ordinarily regular; menses painful. Highest weight 125, now 117.

The blood-picture was the following: hemoglobin 80, red blood-cells 4,960,000, white blood-cells 7,600, polynuclears 53 (of which 3 were immature, 40 ripe, 4 degenerate; of the ripe cells 20 were "dark" and 17 light). Eosinophils 2, lymphocytes 34 (larger forms 24, smaller 10), mast-cells 1.

Case 3: Patient. V. K., male, aged 25, had for 2 years attacks of pain localized in right inguinal region, lie was never confined to bed though said to have had fever; constipated.

Examination and Operative Findings: There was no abdominal distention or rigidity, but well-marked tenderness over McBurney's point. The blood examination showed: hemoglobin 100; white blood-cells 9,300; polynuclears 56 (of which 4 were immature, 45 ripe and 7 degenerate), lymphocytes 42 (of which 33 were large), eosinophils 1, mast-cells 1.

The protoplasm of the polynuclears exhibited, in the majority of the cells, the purplish granules in mauve cytoplasm. The lymphocytes had wide unstained borders. The operation demonstrated ilcocecal bands with kinks; no appendicitis.

The following is presented as a contrasting picture in which the blood study was made before the present series was begun:

Case 4: Patient. E.H.E., aged 15, entered the Bell Memorial Hospital 26 Jan. 1909. He complained of loss of weight, gas on his stomach, distress due to bloating immediately after eating a whole meal but, of less distress when on a restricted diet. The boy bad the mumps, measles and whooping-cough. His tonsils and adenoids bad been, treated, cauterized and dipped.

His present illness begun in February, 1907, with a feeling of fulness in the abdomen. He had gradually lost weight and grown weaker; had some nausea and sour stomach but seldom vomited. His weight 6 months previously was 115.

He slept well, appetite was good, but digestion was bad, and he was constipated.

Examination: Urine examination showed high colour, specific gravity 1.030, reaction acid, no albumin, no sugar, no excessive indican. Blood examination: hemoglobin 90 to 100; reds 4,760,000; whites 6,600, polynuclears is 49.5%, large lymphocytes 6%, small lymphocytes 7.5%, transitionals 2, eosinophils 9, must-cells 0.5, minoiniclears 21.5, azure granulated mononuclears 3, Turck's irritation form 1. Physical examination showed patient emaciated, skin brownish, but soft, except

on wrist and hands. Lungs and heart normal, abdomen retracted and muscles tense. Palpation over the stomach and colon showed no definite tenderness.

The gastric analysis, after a Boas test-meal, showed: total acidity 70, combined acidity 54, free hydrochloric acid 46, lactic acid absent.

The examination of the faeces showed: colour yellowish, faintly acid with evidences of fermentation, and trichomonas numerous.

Operation and Course: 8 March an exploratory laparotomy was done with appendectomy and cecostomy. The entire colon was found to be covered with an extra membrane, which was not removed. The cecostomy wound was utilized to irrigate the colon; and **as long as the Irrigation was continued the patient made steady gains.** 7 March the urine was examined and proved to be acid. clear, no sediment, specific gravity 1.010. The gastric contents, 4 March, after a full meal, were total acidity 107. combined acidity 81, free hydrochloric acid 41, trace of lactic acid. The gastric contents, 6 March, after 48 hours of fasting, showed: total acidity 56, combined acidity 40, free hydrochloric acid 24.

After operation the colon was irrigated through the cecum and the patient improved rapidly, so that he left, the hospital 7 April.

The patient re-entered the hospital 9 May 1909, complaining of distress because of the closure of the cecostomy wound.

The blood-count showed: reds 5,220,000, whites 12.000, pnlynuclears 65%, large lymphocytes 6, small lymphocytes 15.5, transitionals 3, eosinophils 0.5, mononuclears 10. The urine examination, 10 May, was alkaline, no sediment, specific gravity 1.010. Patient, left the hospital 12 May 1000.

He re-entered the hospital 18 May 1910, complaining of nausea, no appetite, belching, and pain over stomach.

His colon had been flushed for about 9 months. After the tube was removed he began to have gastric symptoms—gas, fermentation, lack of appetite, and at intervals soreness over the epigastrium, and nausea. His bowels moved only by the aid of laxatives. The urinalysis at this time showed the urine to be acid, specific gravity 1.025, with some calcium oxalates; otherwise normal.

The patient was operated on, 20 May 1910, and an ileosigmoidostomy performed. He recovered rapidly and was dismissed from the hospital 12 June.

Since then the patient has been normal in every respect.

The value of this blood-picture, if verified by other observers, is at once apparent as an aid in the differential diagnosis of appendicitis and other intra-abdominal inflammations.

My thanks are due to my colleague, Dr. J. F. Binnie, for the privilege of studying his case histories and patients and of utilizing his material in connection with my own in the above study." - Dr George Howard Hoxie, AM, MD in "JAMA", 18 May 1912.

The Early Circulatory Indications of Chronic Bright's Disease

"By Chronic Bright's disease we mean that familiar form of degeneration involving the blood vessels, the kidneys and the heart that in its regular course leads to the death of so large a proportion of the human race who have otherwise been healthy and able to enjoy active and useful careers.

Primarily a Disease of the Circulation

I have long since ceased to regard this condition as essentially a disease of the kidneys, though in the final catastrophe these organs are more often chiefly at fault. Primarily, it is a disease of the circulation in which the brain and the kidneys, being as it were end-organs, first manifest symptoms.

A case that has been under observation for 5 years has just ended fatally by the involvement of the circulation of the brain, producing progressive stupor and finally coma, paralysis and death.

The kidneys at the time of death were apparently in good enough order to have maintained life for a long time.

In this case the greatest care had been exercised in protecting the kidneys by diet, an even temperature and every other possible means, thus allowing the arterial disease an opportunity for its complete development.

The same case, if less carefully guarded, would have progressed by repeated attacks of uremia to a death by the development of anasarca (oedema) and exhaustion.

So the paradox appears that a person may die from Bright's disease with fairly good kidneys, proving that in this disease the brain and the kidneys are both end organs, and that in particular cases the brain may suffer more than the kidneys.

Kidney Symptoms Late to Appear

This point is important in considering the early indications of chronic Bright's disease. The kidneys are insensitive organs, rarely giving rise to pain, intermittent in their action and entirely removed from direct observation.

For that reason disorder of the kidneys must have reached a grave stage before it becomes a matter of consciousness.

On the other hand, the brain, as the seat of consciousness, is highly sensitive to any intermittence of its functions. It is capable also of examination and observation by the observation of the fundus of the eye which is in close relationship to the brain.

So the brain records at all times in a more or less distinct manner the condition of the circulation and a careful study of the symptom-complex soon reveals which disturbances of the circulation indicate organic disease of the vessels and early Bright's disease.

Attention and observation soon make this symptom-complex of extreme significance.

Circulation Symptoms

There are, of course, disturbances of circulation connected with acute Bright's disease. The heart is temporarily debilitated so that there is often established a blowing systolic murmur at the apex.

Nose bleed is another possible result of increased arterial tension, and may, therefore, indicate the beginning of Bright's disease. Another accompaniment of increased arterial tension is headache, due apparently to increased vascular tension in the head.

I would like to class as one of the early circulatory disturbances of chronic Bright's disease certain attacks of indigestion.

These are due at this early stage to disturbances of circulation in the stomach.

Diagnosis

Early symptoms are often an unhealthy look, loss of strength and such disturbances of digestion as may be referred to simple weakness.

The first signs of degeneration are manifested by disorder of function.

The blood vessels act as tubes to convey the blood to different parts of the body, but at the same time through the muscular structure of their walls they act as regulators of blood pressure. This pressure regulating function is an exceedingly complex one and controls the determination of blood to the different parts of the body as it may be most needed.

This regulating function is that which first suffers when the tendency to degeneration begins to show itself so that irregularity of tension is the most important early circulatory indication of chronic Bright's disease.

Arterial tension or a tendency to it causes irregularity of blood pressure and is early recognized by symptoms indicating irregularities of circulation in particular parts of the brain.

This irregularity gives rise to temporary unconsciousness, slight paralysis or simply clumsiness of a limb.

In spite of the more scientific nomenclature of disease the term “Bright's disease” still remains a most convenient name for these cardio-vascular nephritic diseases. It has long been recognized that this disease has its; origin often in structures remote from the kidneys. Not infrequently its first signs are found in the blood vessels. In relation to the circulation the brain most early indicates irregularity. Hence it early suffers from deterioration of the blood vessels, and gives the first symptoms of serious change in blood pressure. In advanced!

Bright's disease we find the brain and the kidneys going hand in hand in the symptomatology of the condition.

The brain, on account of its much more highly-organized and delicate structure, often shows the first symptoms of the complex condition called Bright's disease through its early circulatory indications. The management of this condition is best carried out by hygienic measures." - Dr Louis Faugeres Bishop, MD in "JAMA", 11 October 1902.

Acidosis

Acidosis is a state of high acidity in the blood and by consequence in other body tissues, it usually refers to acidity of the blood plasma.

"I looked for every focus of infection. I had eliminated toxemia and acidosis." - Dr J. A. Stucky, MD in "American Medical Association Section on Laryngology, Otology, and Rhinology", 1822.

Acid Intoxication

"The phenomenon of acidosis is a general condition rather than a specific disease, and is a symptom in many disorders of nutrition.

The immediate cause is a disturbance of the phosphate-carbonate balance in the blood which constitutes its central agency for the maintenance of that approximate neutrality which is necessary to the function of respiration.

The general subject of acid intoxication was opened up by the experiments on acid poisoning with animals by F. Walter (1877).

Acidosis as relating to human nutrition, has to do particularly with acid products of disordered metabolism.

In general, excess of acid in the system may be brought about in 2 ways:

1. By actual excess of acid products.
2. By such a deficiency of bases as leaves the organism subject to disturbance by a relative excess of the normal acid products of katabolism.

The one being in effect quite as truly an acid excess as the other.

The acids of the body which may enter into the disturbance of its approximate neutrality are of diverse origin.

They may be:

1. Inorganic acids from outside the body,
2. Unoxidized organic products of acid reaction,
3. Acid salts, and acid ions of dissociated neutral salts,
4. Sulphuric and phosphoric acids resulting from protein katabolism.

While relative excess of acids may come about:

1. Through abnormally low intake of alkalis and alkaline earths,
2. Through excessive outgo of these same elements,
3. Through deficiency of intake in mineral matter generally, for even a

neutral salt may serve for acid neutralization through its anion entering into relations which mask its potential acidity, as for instance with proteins, thus freeing its cation.

These acids do not circulate free, but are neutralized for the protection of the organism. In brief, the effects of acidosis are dyspnoea (shortness of breath), and attendant nervous symptoms, terminating in stupor and collapse, the causes being the expulsion of carbon dioxide from the blood by stronger acids, its accumulation in the tissues, and the resultant interference with their oxygenation.

In human beings acidosis is well known in a great variety of diseases and conditions, especially in diabetes, gastrointestinal disorders in children, fever, starvation, pregnancy, burns and anaesthesia." - in "Bulletin of the Ohio Agricultural Station", Vol. 1-8, 1889-1915.

"The principal uses of sodium bicarbonate in medicine are as a gastric antacid, to combat systemic acidosis, and to alkalinize urine." - in "The United States Dispensatory and Physicians Pharmacology", 1967.

Nephritis
Inflammation of the Kidneys

"Acidosis may result either from an abnormal formation of acid substances or, as in nephritis, from a decreased elimination of normally formed substances. Under conditions of health, the blood is uniformly maintained at a constant slightly alkaline reaction through the influence of the bicarbonate, phosphate and proteins of the blood.

The carbonates of the blood have been called by L. J. Henderson the first line of defence. Increased pulmonary ventilation, as occurs with dyspnea or hyperpnea (increased rate of breath), serves to increase the excretion of carbon dioxid, thus keeping the reaction of the blood within normal limits.

In conditions of acidosis, other acids may combine with the bicarbonate, robbing the body of its alkali reserve.

Under ordinary conditions, however, the kidneys are able to secrete an acid urine from a nearly neutral blood through the medium of acid phosphate, constituting a second means of defence.

Normally from 5 to 10 gm. of sodium bicarbonate are sufficient to change the reaction of the urine, but in the acidosis of advanced nephritis the deficiency may amount in exceptional instances to as much as 100 of bicarbonate gm. or more.

Palmer and Van Slyke have recently studied this question rather carefully in connection with the carbon dioxid combining power of the blood.

They found that in most pathologic cases the urine did not become more alkaline than blood until a higher plasma bicarbonate had been reached than in normal individuals. The bicarbonate retention may therefore indicate a much more severe acidosis.

Palmer and Van Slyke advise carefully controlling the therapeutic use of sodium bicarbonate. They have calculated that taking 42 pounds as the unit of weight, 0.5 gm. of sodium bicarbonate will raise the plasma carbon dioxid 1%, by volume. In view of this, it is possible to calculate the amount of alkali required to restore the plasma bicarbonate to normal.

The normal range for the carbon dioxid combining power of the blood in the adult, as shown by Van Slyke, Stillman and Cullen, is from 55 to 75 c.c. Of carbon dioxid per hundred c.c. of plasma.

Observations on Acidosis in Nephritis

The first 2 patients suffered from severe chronic interstitial nephritis, showing marked nitrogen retention and acidosis. It is worthy of note that patient E. M. was up and about at the time of the first analyses, while patient A. N., after a short stay in the hospital, was at home for a period of seven weeks feeling improved.

In both of these cases there was pronounced acidosis, and at the end the carbon dioxid dropped to such a low level as to be incompatible with life.

The last 2 patients, M. McA. and W. C, men of 44 and 49 years, respectively, were cases of acute nephritis showing pronounced acidosis (very marked dyspnea), but ending in complete recovery. W. C. was admitted supposedly in "uremic" coma.

On estimating the creatinin and urea in the blood, however, we were surprised at the comparatively slight nitrogen retention, but an examination of the carbon dioxid combining power disclosed the apparent difficulty.

Two infusions of sodium bicarbonate, 12 gm. each, on the 15 and 16, produced quite remarkable clinical results, and in less than 2 weeks the blood findings were normal.

From the data reported, it would appear that all fatal cases of chronic nephritis with marked nitrogen retention show a severe acidosis, sufficient in some instances to be the actual cause of death.

Acidosis is a fairly prominent feature of many cases of acute nephritis, and is present in severe form in all terminal cases with marked nitrogen retention.

Conclusions

All fatal cases of Chronic Nephritis with marked nitrogen retention show a severe acidosis, sufficient in many instances to be the actual cause of death.

In some cases of acute nephritis and acute exacerbation of chronic nephritis the distress is apparently due to the acidosis, since the judicious use of sodium bicarbonate results in general clinical improvement.

With the rise in the carbon dioxid combining power of the blood, the dyspnea and hyperpnea disappear." - Dr Arthur F. Chace, MD, Dr Victor C. Myers, PhD, in "Acidosis in Nephritis", JAMA, 6 March 1920.

The Principal Aims and Methods Of The Emunctologist

The Aim

The Emunctologist should know that: **The body rebuilds itself, constantly through the blood supply.**

All organs of the body are affected by the state of the blood.

Not only the blood carries the nutrients needed to each area of the body, but also carries away all that which has been used, and eliminates same through the several Emunctories pathways.

Thus the principal aim is to purify and strengthen the blood stream, this is crucial in order to:

Restore, Balance and Maintain a Healthy System

Thus the bloodstream must be both cleansed, and nourished.

In the Correcting of Disorders

The Emunctologists with the application of the necessary therapeutic agents as to eliminate, eradicate the drosses produced in the nerve and blood supply to the disturbance of the functioning of organs.

The Treatment of this Element of Disease: Foreign Morbific Matters in the Blood

"The 2 Indications which present themselves are:

1. To Counteract the injurious operation of these matters.
2. To Expel them from the system.

The first of these indications is followed, when we give stimulants to overcome the depressing influence of adynamic fevers, and other sedative poisons, and when opium and other narcotics are administered where irritation prevails.

We do not possess chemical antidotes which can act on the foreign matter in the blood without injuring the blood itself.

The other indication is more generally pursued, although little recognised by practitioners, **to expel the offending matter from the system.**

The excretory organs, especially the kidneys and alimentary canal, are the natural Emunctories through which foreign and offending matters are expelled from the blood; and hence the utility of alterative aperients and diuretics in the treatment of fever, **and other diseases connected with poison or injurious matter in the blood.**

Let us bear in mind, how often fevers and other serious ailments seem to be carried off by spontaneous diarrhoea, diuresis, or perspiration.

Nor should a converse fact be overlooked, that **persons affected with disease of the kidney, which impairs its excretory function, are peculiarly liable to contract infectious diseases, and to suffer from their effects."** - Dr Charles J. B. Williams, MD, in "Principles of Medicine; comprising General Pathology and Therapeutics", 1843.

The Method

In order to achieve both cleansing and nourishment of the bloodstream the Emunctologists makes usage of all appropriate therapeutic measures in which he has been trained.

In its therapeutic practice, the main objective is to maintain the Emunctory System fully and normal working manner.

For it is crucial that the Circulation of the Blood, must be both free from any foreign or intoxicating material, and the same blood must be well balanced at the nutritional level, if there is any change of obtaining a fully and normal recovery, from which ever ailment that body is being recovered.

The Cleansing of the Bloodstream

In order to cleanse the bloodstream and alleviate the lymphatic load, the Emunctologist needs to cleanse both the liver and the colon.

Diet and lifestyle correction or changes need to be advised and the individual needs to understand and apply same it is his prerogative to take responsibility for what he placed in his plate, and the lifestyle he chooses to pursue.

The mental and spiritual attitude is of importance as the body Physical, Mental and Spiritual are One.

Thus the mental has a known and proven effect on the body muscular skeleton system, nervous system, and the blood and lymph circulation.

And, the Emunctologist needs to fully Understand that: **The inner forces within the body, are Spirit in Action.**

Function and Composition of Blood

The blood transports oxygen from the lungs to the cells of the body, where it is needed for metabolism. The carbon dioxide produced during metabolism is carried back to the lungs by the blood, where it is then exhaled.

Blood also provides the cells with nutrients, transports hormones and removes waste products, which the liver, kidneys, intestine, and the skin, then remove by excretion from the body in the urine, bile (removed in faeces), and sweat.

"The blood vascular system is a complicated closed system of contractile elastic tubes arranged so as to allow continuous flow of blood in one direction, and also to allow certain variations of the current.

The blood is kept in perpetual motion, and this is necessary because of the low oxygen capacity of the blood, as it contains only enough; oxygen to sustain the vitality of the organs a few minutes.

Blood circulates under pressure and this is called blood pressure. The total volume of blood is a fixed quantity, but the capacity of the vessels is a very variable one. In life the vessels are more or less contracted through vital activity, and so much is this contractility that the vessels are stretched to hold the blood.

The propelling force of the blood is directly or indirectly the heart plus certain subsidiary phenomena.

The heart is a pump. Fluid finds its way into it and it is forced from it by positive pressure.

It works intermittently, and its movements are such that the mean or average flow of the blood into the vessels and through the vessels remains practically constant. The blood vessels, particularly the arterioles, capillaries and venules, are capable of undergoing marked active and passive variation in caliber, thus affecting their capacity and resistance and quality of blood flowing through them at a given period of time. Changes in the caliber of vessels at a local or circumscribed area tend to localize the pressure, resistance, velocity and volume of the current of that area. This may be affected without any apparent change on the circulation as a whole. The volume of blood flowing through the vessels, other things being equal, is as the square of the diameter of the vessels.

Function of the Blood

A - Plasma is:

1. Antitoxic (by that I mean in the plasma are substances which neutralize toxins that are made by bacteria or other cells).
2. Globulicidal.
3. Bactericidal.

4. A carrier of nutritive matter to various tissues.
5. A carrier of effete matters which result from metabolic activity.
6. Is a power as a solvent.
7. By virtue of being a circulating fluid it serves as a medium of heat distribution.
8. In the plasma solution, we find large numbers of substances which are functionally of importance. The proteins, for instance, serve for nutrition purposes.

The sugar in the blood is used by the muscles to a great extent. It has inorganic salts by which certain osmotic properties are given to the blood, also important in certain physiological processes.

B. Red blood corpuscles or erythrocytes consist very largely of hemoglobin, plus a stroma or capsule.

They are:

1. A carrier of oxygen (during passage of blood through the lungs and skin they take up oxygen and give it off as they go through the tissues; they do not become saturated with oxygen, and only partly oxidized; there is only a partial loss of oxygen).
2. A carrier of nutritive materials.
3. A carrier of carbon dioxid.
4. Erythrocytes possibly transfer noncoagulable proteins into coagulable proteins.
5. It is possible that they take some part in clotting.
6. When red blood corpuscles undergo disintegration they furnish hemoglobin, which is altered to form biliary and urinary colouring matters.

Iron is stored up in the liver for the purpose of making new hemoglobin.

C. Leukocytes:

1. Serve to maintain the proper composition of the blood, especially in reference to proteins.
2. Possible aid in absorption of, and changes in certain products of digestion.
3. May be meta plastic; that is, a reserve of living protoplasm utilized in repair.
4. Certain of them are phagocytic in character.
5. They secrete toxins to kill or impede different substances.
6. Take part in coagulation.
7. probably yield elementary granules to the blood.

Portal System

The portal system is composed of all the veins which have their origin in the walls of the digestive tract below the diaphragm (rectum excepted) and includes

also the veins which return the blood from the pancreas, spleen and gallbladder.

It presents a marked peculiarity in that the system begins and ends in capillaries, the blood which it contains having entered its constituent veins from the capillaries of the intestine, stomach, and other organs mentioned above, and passing thence to the liver, where it traverses another set of capillaries by which it reaches the hepatic veins and so the heart.

Coming as it does principally from the intestine, the portal blood is more or less laden with nutritive material, which has been digested and absorbed through the inner walls, but is not yet in a condition, so far as some of its constituents are concerned, suitable for assimilation by the tissues.

To undergo the changes necessary for its conversion into assimilable material, it is carried by the portal vein to the liver, and as it passes through the capillaries of that organ it undergoes the necessary modifications.

The consequences of portal obstruction are various, but may as a rule easily be understood by referring each symptom to its anatomical basis in obstruction of one or the other of the venous tributaries.

The chief results are:

1. Enlargement of the liver itself, at first congestive, later from hyperplasia. Diminution in the quantity of bile or alteration in its character may cause constipation and indigestion, or escape of its colouring matter and its absorption by the hepatic veins may give rise to jaundice.

2. From congestion of the gastric and intestinal mucosa (through the superior and inferior mesenteric, splenic and gastric tributaries), there may develop indigestion, flatulence, eructations and vomiting which is often bloody; serous exudation into the bowel; intestinal indigestion and diarrhoea sometimes with black stools from decomposed blood; or exudation into the general peritoneal cavity; ascites, enlargement and tenderness of the spleen; hemorrhoids (from the communication) between the middle and inferior hemorrhoidal veins (systemic) and the superior hemorrhoidal vein (portal); varicosities in the lower extremities possibly from the same communication between the caval and portal systems, but oftener from direct interference, by an enlarged liver, with the current in the inferior cava." - Dr Frank F. D. Reckord, MD in "The Anatomy, Physiology and Pathology of the Blood Vascular System", Pennsylvania Medical Journal, October 1917.

3.
The Constitution of the Blood

Blood is a liquid tissue (a connective tissue) It is made up of cellular elements and an extracellular matrix consisting of:

- 55% plasma
- 45% different types of blood cells

- Red blood cells
- White blood cells
- Platelets

One of the functions of blood is to transport materials around the body.

White blood cells and platelets are part of the body's immune system, but plasma and red blood cells are involved in transport.

Plasma 55%

Plasma is a light yellow liquid. Over 90% of blood plasma is water, while less than 10% is dissolved substances, mostly 3 types of proteins (Albumin, globulins, fibrinogen).

It transports dissolved substances around the body, including:

- Hormones.
- Electrolytes.
- Nutrients, such as water, glucose, amino acids, minerals and vitamins A, D, E, and K.
- Waste substances, such as carbon dioxide and urea.

Red blood cells

Over 99% of the solid particles present in blood are cells that are called red blood cells (erythrocytes) due to their red colour. Red blood cells contain a protein called haemoglobin. This sticks to oxygen, allowing it to be carried round the circulatory system.

White blood cells

The rest of cells in the blood are pale or colourless white blood cells (Leukocytes), which include:

Lymphocytes, Monocytes, Eosinophils, Basophils, Neutrophils, these help fight infections and aid in the immune process, and platelets (thrombocytes) which help in blood clotting. **White blood cells play an important role in the immune system.** Here the different blood cells have different functions: some fight intruders such as bacteria, parasites or fungi themselves and render them harmless. Others produce antibodies, which specifically target foreign objects or germs. Leukocytes also have a part in allergic reactions: they make sure, for instance, that someone with a house dust allergy gets a runny nose when he or she comes into contact with dust. Certain lymphocytes can also kill cancerous cells that have been produced elsewhere in the body. Most of the white blood cells have a lifespan of only a few hours to several days. Some lymphocytes can remain in the body for many years, though.

Platelets

Blood platelets (thrombocytes) also look like little discs, as do the red blood cells, and they also have no cell nucleus. However, they are much smaller than the red blood cells. They play an important role in blood clotting: if a blood vessel is damaged – for instance when you are cut by a knife – the healing process begins with blood platelets binding closely together on the inside of the damaged wall of the blood vessel. This causes a plug to form quickly that closes the wound temporarily: thrombocytes usually live only 5 to 9 days.

Old thrombocytes are mainly disposed of in the spleen.

The Function of the Blood

Blood has 3 important functions:

1. Transportation

The blood transports oxygen from the lungs to the cells of the body, where it is needed for metabolism. The carbon dioxide produced during metabolism is carried back to the lungs by the blood, where it is then exhaled. Blood also provides the cells with nutrients, transports hormones and removes waste products, which the liver, the kidneys or the intestine, for example, then get rid of.

2. Regulation

The blood helps to maintain the right body temperature. The so-called pH value of the blood is kept at a level ideal for the body.

The pH value tells us how acidic or alkaline a liquid is. A constant pH value is very important for bodily functions.

3. Protection

If a blood vessel is damaged, certain parts of the blood, clot together very quickly and make sure that a scrape, for instance, stops bleeding. **This is how the body is protected against losing blood.**

The Circulation of the Blood

The blood circulates twice in the liver for each time it circulates through the heart.

If we take this physiological fact into consideration, then we start to comprehend how to state of contamination of the blood has its effect in the health and functioning of the heart.

Heart Conditions

Heart conditions (excluding those of malformations), come from the state of the blood.

At the Embryo stage during the Embryonic Folding, the Gastrointestinal tract is formed.

The Gastrointestinal tract is the first part to be formed, giving form to the primitive gut from the mouth, stomach, colon to the anus.

During the Organogenesis phase the creation of the Heart is formed next.

And the heart begins beating/pumping blood around day 21.

Here we call the attention of the Emunctologists to further study this anatomical fact, that both **the Gastrointestinal System, and the Heart are created before the Cerebral Brain is formed.**

The Cerebral Brain, as such, **starts to be formed at 25 days,** in the early embryonic development of the Nervous System.

The neural tube anterior end develops into the brain, and the posterior portion becomes the spinal cord.

This Anatomical Fact should make the Emunctologist aware of how the natural forces of the body operate.

The attention of the Emunctologist Physician should always be placed:

First - On the Gastrointestinal System, understanding that the beginning to the end, are one same tube. That which affects the mouth, teeth, tongue also affect the stomach, colon to the anus. That which affects the Gastrointestinal System is called Food either solids or liquids, in the first part in its raw or cooked form during mechanical and chemical digestion, and in the second part of the Gastrointestinal system in its digestion, absorption and elimination form.

Second - In the Circulation System, of which the Heart functions has a pump moving the blood in its circulation.

State of the Blood

The State of the Blood is the single and most important factor in the causation of Organic Disease.

To cleanse of the Bloodstream, is the primary aim of the Emunctologist.

Once the bloodstream is cleaned, from any toxic load that gives rise, to any health condition, it allows then for the return of health.

Depression

In Depression the health of the Heart is connected, this is an indication that the state of the Blood, which is what goes through the Heart is with a level of Toxic Content.

What Affects the Heart

1. State of **Toxicity of the Bloodstream:** from Malnutrition or Chemical Contaminants;

a) Chemical Contaminants from Acrylamide, Benzene, Dioxins and PCBs, Ethyl Carbamate, Furan, Melamine, Perchlorate, Radionuclides, Toxic Elements in Foods & Food-ware;
b) Chemical Contaminants, from Hazardous Pharmaceutical Drugs in Structure or Toxicity, these can cause: Carcinogenicity (ability or tendency of a chemical to induce tumours), Teratogenicity (capability to cause malformations or defects to an embryo or foetus), Developmental Toxicity, Reproductive Toxicity, Organ Toxicity, and Genotoxicity (chemical agents that damages the genetic information within a cell causing mutations, which may lead to cancer);
c) Chemical Contaminants from Pesticides.

2. Impediment to the Blood & Lymphatic Circulation; either

a) Structural Physical Impediment;
b) Causation from the accumulation of Toxic Sediment from Metabolism in either kidneys, liver or lungs.

3. Emotions: by Influence;

4. Malformations: Congenital.

From this list we can understand that the state of the blood affects the functioning of the Heart.

The state of purity of the Blood sets in consequence the Rhythm of the Heart.

The Rhythms of the Heart act in accordance with the state of toxicity of the Blood. If the Emunctologist understands that a toxic, overloaded and overworked kidney is at the causation of Blood Pressure, here you have the key to understand the importance of keeping and maintaining a clean and healthy state of the Bloodstream.

Metabolic Toxic Sediment or Toxic Load

Toxicity in the human body in general is due to two reasons:

1. Wrong Eating Habits;
2. Over Indulgences as to food and drink, which inevitably and as a consequence, leave their effect upon the circulation between the liver and the kidneys.

How the Blood Becomes Contaminated

"The lower end of the intestine is of the size that requires emptying every 6 hours, but by habit we retain its contents 24 hours. The result is ulcers and cancer. The products of intestinal toxemia are absorbed and we have filthy blood, and there are a host of resulting ailments." - Dr Arbuthnot Lane, MD, American Medicine, Vol. 31, 1925.

Certain Pathological States of the Blood Specially Characterizing Many Dangerous Diseases, Intentions and Means by Which These States are Most Successfully Treated

"The author observed that the alteration of the blood in severe and malignant forms of disease had engaged his attention for many years, and had been discussed in his work "Dictionary on Practical Medicine", under the heads of Abscess, Absorption, Blood, of the Causes and Pathology of Disease, etc., and his views of the morbid changes in these disorders had been long before the profession; but he thought, by bringing them before the Society in a more practical and connected form, he might succeed in **directing the attention of the Society to matters of great interest and importance in relation to the sources of contamination, and the avenues or channels through which these passed into the blood.**

The morbid state to which the author more particularly directed attention, might be termed contaminated or vitiated according to the causes of alteration, as these causes might be external or internal in respect of the frame; external agents and influences, as well as internal vital and functional changes, might equally be the sources of this vitiation, or both might cooperate.

If a cursory view of the sources whence vitiation or contamination of the blood proceeded were taken, they would be found most numerous, varied, and often associated, and that they infected or invaded the blood by one or more channels; and although manifested in every phase and grade of morbid change, yet this frequently preserved certain specific features.

These morbid states of the blood might arise:

1. From causes acting on the digestive canal, and the vessels proceeding from this canal;
2. From agents taken in by respiratory action, and through the medium of the respiratory surface;
3. From causes acting upon any part of the external surface, or any tissue or part of the frame;
4. From the arrest of any depurating or eliminating function, or even from the impeded or imperfect performance of such function;

5. From the absorption or passage of any morbid purulent secretion or excretion into the circulating mass;
6. From the conditions of vital influence, or the organic venous power endowing the heart and blood-vessels, and from the reciprocating influence exerted by the vascular system, and the haemato-globulin circulating through the system.

The author then detailed copious illustrations of the several causes of contamination passing through these channels. The effects of various kinds of food; emanations from numerous sources of pollution; air vitiated by overcrowding; absorption by an abraded, punctured, or incised wound; the passage of sanious, puriform, or other morbid matters into the circulating current; defective action in, and imperfect discharge of, the several depurating functions, so necessary to the preservation of a healthy state of the blood; and, lastly, influences or agents, extrinsic and intrinsic, which either excite or depress the organic nervous system, reacting on the vascular system, and changing the blood circulating in it. The author adverted at some length to the operation of these conditions on the blood itself, manifested by a destruction or waste of the haemato-globulin or red corpuscles.

He was led to believe that these changes consisted:

1. In a metamorphosis of the globules, or a partial vital conversion or decomposition of them;
2. By a portion of the globules or haemato-globulin being converted into bile;
3. By the epithelial cells, thrown off by the several Emunctories, especially the kidneys, skin, and intestinal mucous follicles, being transformed blood-globules;
4. That they are also partly expended in the elaboration of the genital secretions.

These were the chief modes or sources of waste. Having referred to Dr Simon's arrangement and nomenclature of blood diseases, the author passed in review some of the more remarkable and characteristic conditions of malignant diseases arising from blood contamination, and concluded by relating one or more cases in illustration of these conditions." - Dr James Copland, FRS in "Lancet", March 1854.

Arteriosclerosis, Cardiosclerosis & Intestinal Putrefaction

"The name Arteriosclerosis has meant too often to physicians the permanent and hopeless physical hardening of the arteries. If it meant that to me. I would give the kind of work that I do a very wide berth, and become a specialist in something else besides cardiovascular disease.

My definition of Arteriosclerosis is a clinical condition characterized by alteration in the blood-vessels, ordinarily accompanied by certain changes in the heart.

These changes generally consist of an increase of connective tissue, with hypertrophy of the muscular elements, and a thinning or thickening of the lining membranes.

Arteriosclerosis may be said to begin as soon as toxic material or physiological strain has brought about an alteration in the habitual physiology or structure of the blood-vessels.

The functional disorder of arteriosclerosis is of equal, if not greater, importance than the structural changes.

The Causes of Arteriosclerosis

The vast majority of cases, as they occur in adult life, are due to the indirect influence of intestinal putrefaction upon the blood vessels and nervous tissue.

The well cared for classes eat too much rich food, they are short on exercise, live on a high plane of nervous tension, and they are often attacked with intestinal putrefaction.

Now, what impressed me very early in the study of this subject was the relation between indican, albumin and casts, and trouble with the myocardium, and the relation between indican and blood pressure.

In the laboratory, we have, up to the present time, examined about 50,000 specimens of urine from the well cared for classes, testing them for indican, and I have been watching many of these patients for 7 or 8 years, and they all present nearly the same clinical picture.

This is the natural course of an ordinary case of arteriosclerosis:

At first the patient has no symptoms. Arteriosclerosis in its early stages the first thing that is noticed, if there is an accidental examination of the urine, is the presence of indican, or indol, skatol, or phenol, one or all of the putrefaction group.

The patient has no symptoms until one of several things happens. After a long time the patient may have an attack of hemiplegia, or quite early he may have an attack of neurasthenia (for intestinal putrefaction affects the nerves), then the condition is recognized.

In the latter case, the patient undergoes treatment, is sent away, and frequently escapes arteriosclerosis.

If he happens to escape nervous symptoms, he goes on for a good many years excreting indican (being the index of various toxins), and then after a while the excretion of these products through the kidneys damages them.

Then albuminuria develops and a few hyaline casts appear. If this is not the case, the myocardium often becomes involved.

The arteries are affected last.

So, some trouble with the myocardium attacks the patient, he has a soft murmur, and slight dilatation of the heart; or else praecordial pain, which is explained by the reflex protective phenomenon, which consists of the fact, that whenever an unstriped muscular tissue is unable to do its work, it irritates that level of the spinal cord, and the sensory nerves passing through it are irritated, so that the nerve gives rise to pain that is felt in the brain and referred to the distribution of the nerve.

The little boy who eats the green apple has the same kind of pain, and it is exactly analogous to the failure of the heart muscle which is poisoned by the elements of intestinal putrefaction, and has difficulty in doing its work.

Now, if the patient escapes cardiac symptoms and neurasthenia, and albuminuria is not discovered, then last of all the blood-vessels are affected.

The blood-vessels are not affected so much directly, but indirectly through the kidneys.

The kidneys are damaged and unable to do their work, except with additional blood pressure, so when the kidneys are unable to do their work properly, blood pressure is raised. **It is a compensatory phenomenon.**

When the blood pressure is raised, the heart becomes hypertrophied to more easily keep up the blood pressure, and the blood-vessels themselves become hypertrophied for the same reason.

We have at first the hypertrophy of the blood-vessels, and later the deposit of fibrous tissue.

I should say that in the early stages of this condition, when the toxic elements are active though excreted, and the structural changes have not taken place in the kidneys enough to increase blood pressure, these patients have low blood pressure because of the disturbance of the tone of the heart muscle, and the muscular elements of the blood-vessels.

The moment the kidneys become at all incompetent, there is a tendency to high blood pressure.

Thus we have a vicious circle, we have the hypertrophied heart and blood-vessels and the damaged kidneys. The kidneys and blood-vessels are progressively damaged, and at the end of 25 or 30 years, the patient, who started with indicanuria, has changed into a typical case of Bright's disease, with hypertrophied heart and blood-vessels, and liability to terminal apoplexy, uraemia, or cardiac dilatation. This is the natural history of a case of arteriosclerosis.

Arteriosclerosis, as you all know perfectly well, is synonymous with Bright's disease, and is the name of a general condition. The least important element of arteriosclerosis is the deposit of lime salts in the blood-vessels.

Arteriosclerosis starts with hypertrophy of the median coat, and muscular elements, and deposits of fibrous tissue come much later.

Another point is, that no matter how thickened or beaded arteries are, they are always able to be dilated and relaxed by proper measures.

The great symptom of arteriosclerosis that has attracted most attention of late years is blood pressure.

I divided blood pressure cases into 4 classes:

1. Primary low blood pressure cases which are found in a great many patients under a good many conditions and are of no particular importance in this connection. You find it as a constitutional condition in a good many young people, in neurasthenia, and in cases of debility. If it is shown to be toxic, of course.

2. The high pressure cases are all those cases in which there exists high blood pressure or a demand for high blood pressure. They include the cases in which the kidneys demand a high blood pressure to carry on their work.

Speaking of cardiac dilatation suggests the mention of the fact that digitalis is a specific in cases of fibrillation of the auricle, and that I have seen several cases apparently due to autointoxication from intestinal putrefaction.

Case of a woman 27 years old, married, and the mother of one healthy child. Her heart was extremely dilated, and irregular in force and rhythm.

She suffered from general oedema, enlargement of the liver, and congestion of the lungs.

This condition had come on gradually, and no satisfactory cause had been discovered. My laboratory reported the evidence of extreme intestinal putrefaction.

Subsequent events showed that the enlargement of the abdomen, which was supposed to be accounted for by the enlarged liver and the ascites, also contained a large quantity of retained faecal matter.

This was gotten rid of by the usual methods which suggested themselves when the condition was discovered.

Our diagnosis was nodal rhythm (this being several years before the definite clinical recognition of fibrillation) due to the influence of autointoxication upon the heart. My diagnosis, at the present moment, would be fibrillation of the auricle due to the effect of autointoxication upon that part of the heart. I told him that I did not believe that because a man had murmurs and a high blood pressure and all those symptoms that he was at the end of things at all, and that his whole trouble was due to intestinal putrefaction.

No one had told him that. The urine was loaded with indican. And sad to say, it is generally the good, pious people who acquire arteriosclerosis, who go home every night and eat enormous dinners, and who do not exercise.

I put this man on castor oil, milk, and a diet limited to 50 gr of protein a day. And gave iodide only after meals, in grain doses.

On that treatment this physician has not lost a single day of work this winter, and he has kept up his clinical work, lecturing and so on, and he went off on a vacation in much better condition than he was in last fall.

If that does not prove that arteriosclerosis is due to intestinal putrefaction, that high blood pressure must not be interfered with except by treating its cause, and that the functional disorder of arteriosclerosis is of more importance than the structural damage.

Specific Effect of Digitalis

In a report of his Oliver Sharpey Lectures on Heart Failure, delivered before the Royal College of Physicians of London, 4 to 6 April, by Dr James MacKenzie, occur the following words:

> *"The vast majority of patients in whom digitalis acts with such marvellous effect in slowing the rate and improving the condition are those affected with auricular fibrillation. The reason that digitalis has acquired such a reputation as a cardiac drug is due to the peculiar susceptibility of patients with auricular fibrillation, and practically all recorded cases illustrating the remarkable effects of digitalis are cases of auricular fibrillation. Hearts with the normal rhythm are seldom so sensitive, and in them there is not the same tendency to slowing of the rate."*

Case of a large man, 65 years of age, who had gradually developed shortness of breath. He gave a history of great indiscretion in the eating of food. The laboratory examination showed albumin, casts, and a well decided indican reaction.

His pulse was 150, as far as could be estimated, and was extremely irregular in force and rhythm. There was some oedema of the legs, some tenderness over the liver, and some moist rales at the base of the chest behind.

His wife said he had almost suffocated during the night on the train.

He was taking a good deal of medicine of various kinds.

The examination of the heart showed the characteristic signs of hypertrophy, dilatation, and sclerosis at the beginning of the aorta.I was able to promise this man that he would be feeling all right in a few days, provided he would obey instructions. He was put upon a low protein diet, principally of bread and butter and green vegetables.

His excessive medication was stopped (which was mostly of his own initiating), and he was given tablets, containing the already mentioned purified preparation of digitalis, equivalent to a grain and a half of the drug, every 4 hours.

The next day after he had taken 6 tablets, which, of course, was a very large dose, but the condition was a desperate one, he was much improved, and felt distinctly better.

The tablets were still continued until the next day when he had taken 8 of them.

The large dose was also justified by the fact that the patient was a very large man, weighing in the neighbourhood of 90 kg. It was continued until the next day, when it was reduced to twice daily.

On the next day, the 4th day of treatment, the pulse was 88, and there had been a large flow of urine, and the patient felt perfectly well, though he could not realize what had happened to him—so different were his sensations from the previous weeks.

The digitalis was continued for a few days at small dosage, and then stopped entirely. As he was about to take a steamer for Europe, he was instructed as to the use of the tablets, as they might be needed by the recurrence of symptoms of heart failure.

The specific effect of digitalis in this case was truly extraordinary, and was perhaps as good an example as could be found of the specific effect mentioned by Mackenzie.

We are prone to speak of specific remedies as being limited to quinine in malaria, I think we can add digitalis in attacks of heart failure in the course of fibrillation of the auricle.

In every instance digitalis should be stopped when its specific action has been developed and not carried on with the idea of restoring rhythm.

I would like to register my belief that these cases had their origin in intestinal putrefaction originating toxins that attacked the muscle of the auricle." - " Dr Louis Faugeres Bishop, MD in "New York Medical Journal", 9 Sep. 1911.

Circulatory Conditions

"Tinnitus Aurium, are due to circulatory disease seems to me to be suggested by the fact that audible murmurs are often heard in the circulatory system in cases of anemia and relaxed blood vessels.

It is reasonable to suppose that some of the sounds heard by the patient alone are similar in origin, and it has been my good fortune in a few instances in which these sounds were believed by me to be due to circulatory disease to observe the removal of the symptom when the circulatory condition was improved.

I would place among the most important advances in my knowledge the appreciation of the fact that weak circulation so often met with in severe disease is more often a matter of vasomotor deficiency than of heart weakness.

The heart is usually competent to carry on the circulation provided the condition of the peripheral vessels can be properly controlled.

There are three great important locations of vasomotor control; in the medulla and brain, in the spinal cord and in the blood vessels themselves.

The first to fail in severe disease is that in the medulla, and recently it has seemed to me that I have studied cases of penumonia in which the vasomotor control has been transferred from the medulla to the other 2 locations.

In the low tension of the type in which circulatory ear symptoms were manifest, there seemed to me to be a combination of rather general vasomotor insufficiency, and a degeneration of the heart muscle.

In other words, a weak heart in which compensatory constriction of the peripheral vessels had not taken place.

Many ear symptoms, too often considered as purely local, are the local expression of a general disease.

Therefore, a tinnitus and slight deafness, with slight loss of bone conduction, may be of far deeper significance than simply disease of the perceiving apparatus, and for this reason we should go deeply into the etiology of slight deafness, possibly blocking thereby the march of a general disease, which ultimately may harass, if- not annihilate the individual.

Low Arterial Tension that is a Reflex of a Constitutional Condition

Experience has shown that nothing is gained with these individuals by the use of drugs to increase arterial tension. It is quite possible to make the pulse for the time being approximate the normal; indeed, this often happens spontaneously when the heart and circulation are physiologically stimulated by exercise or fever.

The same patients who suffer from low arterial tension are very apt to manifest other symptoms of defective nervous control, and the removal of the underlying condition will bring about an improvement in the circulation.

The most important element of treatment is systematic exercise. These patients are often dependent for their well-being on regular physical exertion.

Often they feel much better if they can take some form of stirring exercise.

There are other cases in which it is found that iron improve the condition when it becomes very marked.

In still other eases very hot baths take the place of vigorous exercise and improve the tone of the circulation. It should be remarked that this is a secondary effect, because, if the circulation be examined immediately after the bath, it will be found to be more relaxed than usual. **Although one would expect beneficial results from cold bathing, it is found by experience to be unsatisfactory in cases of constitutional low arterial tension.** Such subjects do not react, and the effect is not satisfactory.

Treatment

This patient's symptoms were relieved by sodium iodide and digitalis, with attention to: **Diet**, graduated **Exercise**, and **Hydropathy**.

Conclusion

1. There are certain cases of Tinnitus Aurium which are a local manifestation to general circulatory disorder.
2. This may have its foundation in arteriosclerosis, but the blood-vessel disorder is often, in a large measure, functional.
3. It is found in connection with high blood pressure and also with low blood pressure." - Dr Louis Faugeres Bishop, MD in "JAMA", 7 Nov. 1908.

The Mechanism of Megaloblastic Blood Formation

"It is possible to divide all macrocytic anaemias into 2 groups:

Group 1 - Contains the macrocytic anaemias which develop from a megaloblastic bone-marrow consequent on a deficiency of a specific factor necessary for the continuation of normal blood formation.

Group 2 - Consists of those anaemias in which the macrocytosis results from causes other than a deficiency of the specific anti-anaemic factor.

The discovery by Minot that liver contains a substance which causes blood regeneration in pernicious anaemia and the investigations of Castle in regard to the aetiology of this disease have demonstrated that both the stomach and the liver play an important role in normal blood formation.

Normally the stomach secretes an enzyme called the "intrinsic factor" which interacts with an extrinsic factor present in food, particularly beef muscle, eggs, autolysed yeast and wheat germ, to form a substance which is absorbed and stored in the liver.

This latter substance, which is called the specific anti-anaemic factor, is essential for the continuation of normoblastic blood formation. When it is deficient the bone-marrow reverts to megaloblastic blood formation and a megalocytic anaemia develops. Proof of this statement is supplied by:

(a) The effects obtained from substitution therapy which rapidly produces a marked haematological and clinical improvement and a change in the blood picture to the normocyte type and;

(b) Studies of the bone-marrow obtained by sternal puncture performed prior to and at intervals of a few days after the administration of the anti-anaemic factor (liver extract). Prior to treatment the bone-marrow is seen to contain large numbers of big pale cells with vesicular nuclei (primitive megaloblasts). Five days after the parenteral injection of liver extract intense proliferation of the cells occurs, many of which show active mitosis. Within a few weeks the erythropoietic portion of the bone-marrow will be found to be composed almost entirely of cells of the normoblastic series.

Megaloblastic Blood Formation may result from a Failure of Absorption of the Specific Anti-anaemic Factor It is well known that a megalocytic anaemia may develop in certain diarrhoeal diseases.

The defective absorption may be due to intestinal impermeability or to small intestinal hurry or to a combination of both factors. The diarrhoea may be of a watery or fatty type. It may be due to inflammation of the bowel or to mechanical causes. The latter may arise as the result of disease.

Megaloblastic Blood Formation may result from a Failure of Storage or of Final Synthesis of the Anti- anaemic Factor in the Liver The remarkably beneficial effects of liver therapy in pernicious anaemia clearly indicate the importance of this organ as the principal storehouse of the anti-anaemic factor.

Conclusions

The deficiency of the specific anti-anaemic factor, deficiencies of other factors necessary for normal function and structure frequently occur namely, calcium, iron, vitamins and protein. A multiple deficiency is particularly liable to develop if the mechanism causing deficiency is mainly one of intestinal impermeability or intestinal hurry (malabsorption). The need for correcting the multiple deficiencies present in the megalocytic anaemias due to defective absorption is stressed. In addition to parenteral treatment with the cruder liver extracts, calcium iron, vitamin B and animal protein, including liver, must be given in abundance." - Dr L.S. P. Davidson, MD, FRCP, in "Edinburgh Medical Journal", 1939.

The Role of White Blood Cells

White Blood Cells, also called leukocytes, are the cells of the immune system, among other things they can be seen under microscope to chase and eliminate bacteria.

White Blood Cells

"White cells exist not only in blood and lymph but also in interstitial space; indeed only a small fraction (perhaps only 4%) is present in blood. They can easily leave or enter in circulation; they have a tendency to gather in certain normal tissues (the lungs, for instance) or damaged sites." - in "International Series of Monographs", Vol. 5, 1959.

Macrophage Cells

Macrophages are a type of white blood cell, of the immune system, that engulfs and digests cellular debris, foreign substances, microbes, cancer cells, and anything else that does not have the type of proteins specific to healthy body cells on its surface in a process called phagocytosis.

Natural killer cells

Natural killer cells are a type of lymphocyte, a white blood cell and a component of innate immune system. Natural killer cells play a major role in the host-rejection of both tumours and virally infected cells. This cells are extremely aggressive and can be seen under microscope destroying tumours, and attacking cancer.

Cytotoxic T Cell

Cytotoxic T Cell, is a T lymphocyte, a type of white blood cell, that kills cancer cells. These cells are extremely aggressive, under microscope they can be seen chancing, attacking, devouring and destroying cancer.

Is Man Body Potentially Immortal

Time Does Not Make Us Senile
The Body is Continually Renewed. Toxins from Cell-Refuse, and Bowel-Bacteria, Bring Sickness, Old Age, and Death

"Microbes are our best friends and our worst foes.

They are a continual menace because they are ubiquitous.

At every step we crush millions of these vegetable snakes that are often more poisonous than serpents.

The rapidity with which bacteria multiply is incredible.

They generate by fission, that is, each microbe splits in half and becomes 2, 3 times every hour.

The germ, whose birth I observed a moment ago with my microscope, will become a mother in twenty minutes, a grandmother in forty and, if I watch closely, without fail, I shall see the accouchment of a great grandchild at the end of an hour.

Dr Mutch, the leading bacteriologist of Europe, has calculated that if the world were made of wet sugar, the progeny of one single germ would destroy the whole earth in 10 days by turning it into alcohol.

The Defences of The Body

But Nature's lines of defence, protecting our bodies against bacteria, are many and most effective. First of all, there is the skin which acts as a miraculous coat of armour through which no germ can penetrate. Then there is that marvelous army of the interior, the leucocytes. Every drop of blood of every creature is provided with regiments of germ-eating cells always ready to devour any microbe that finds entrance when the skin is cut or abraided. Sometimes our friendly phagocytes get the worst of the encounter and are overpowered.

Then the victorious bacteria rush through the veins and arteries, multiplying with fearful rapidity and Throwing out poisonous wastes wherever they go.

The unfortunate man or animal whose body has been invaded and thus overwhelmed by microbes, feels very sick and we say he has septicemia, smallpox, typhoid or diphtheria according to the type of germ that is devouring the blood.

But the battle is not, necessarily, lost even then, for Nature's resources are by no means exhausted, even when the germs have triumphed over the little phagocyte soldiers.

The innate psychic power, or subconscious mind, which I often call the "Doctor-within-us," at once sets to work to manufacture an antitoxin to destroy the enemy **bacteria and their poisons. Nature, with marvellous wisdom, finds the materials for her wonderful remedies in the elements contained in the blood.**

And when the invading bacteria and their poisons have been driven from the body, the "Doctor- within-us" does not relinquish his efforts, but for many years continues to manufacture and keep on hand a supply of the special anti-toxin to guard against future attacks.

If we place a few typhoid germs in a little clear bouillon broth, they will be seen under the microscope, sporting like boys at play, especially if we treat them to a drop of fresh blood.

But if the blood be taken from the veins of a person who, perhaps years ago, recovered from typhoid fever, in a moment the bacteria rush together in a clump, terrified, paralysed and powerless. This is called the agglutination test, by which we tell whether a person is immune to typhoid fever.

The germs that prey on living creatures are called pathogens. All others feed upon dead matter only, and are known as saprophites. They are the scavengers of nature. It is their business to tear to pieces and redistribute the elements of all organic matter that is no longer alive.

The saprophites that consume protein, produce virulent poisons. They abound in dead flesh, and for this reason, a diet of meat is unsuitable for all except naturally carnivorous animals that devour their prey while it is still living.

Fermentative saprophites that attack dead plants and fruits also make toxins, but not so virulent as those generated by the proteolytic or protein-splitting bacteria.

Alcohol, an excretion of fermentative germs, is a mortal poison when concentrated. That is the reason it is impossible to obtain more than 13% of alcohol except by distillation.

"Alcohol is simply the excretion of microscopic germs". It might be called the urine of bacteria. Fermentative microbes are always present on the skins of grapes. When the fruit is pressed they get into the juice, eat up the sugar and excrete the liquid we call alcohol. **The waste products of all living creatures are poisonous.** The refuse from these little wine-makers is no exception. **When these microbes have polluted the juice with 13% of alcohol they are all killed by their own toxic excretion. This is the reason it is impossible to produce beer or wine with more spirit than 13%.**

All Animals Commit Suicide — But the germs that make wine and beer are not the only creatures that commit suicide by re-absorbing their own waste products.

All animals, including man, eventually destroy themselves in exactly the same way. Were it not for this tragic fact, man, and all other animals, would be potentially immortal.

The microscope proves that the body of every living being is simply an assemblage of tiny cells. Each one of these cells is a complete creature that breathes, eats, drinks and excretes its wastes of digestion, and at the end of a few weeks dies, and is carried away by the blood stream, sepulchered for a short time in the lower bowel, and eventually cast out from the body with the faeces.

But each of these microscopic living bricks, of which our flesh is composed, gives birth to a successor before it expires.

Therefore our bodies are in a continual flux.

Little by little, every day we die and just as gradually and as continuously, every moment, section by section we are being reborn.

The oldest man therefore is but a baby. Scarcely a particle of his body is more than a year old. **Even our bones, through the medium of the microscopic blood-tubes by which they are intersected, pass away piece by piece and are constantly renewed.**

Glands Destroy Poisons

Nature does her best to protect all of her creatures against the poisonous excreta of the cells. She accomplishes this in 2 ways.

1. By the blood-stream, which acts as a sewer to carry away this refuse eliminated by the tissues. Insects and other invertebrate creatures that are not furnished with a drainage system, such as the veins provide, are always short-lived.

2. The higher animals are equipped with glands for the purpose of destroying the poisonous wastes. These antitoxic organs are always in a rudimentary form at birth and are gradually perfected during the growth period." - James Empringham, in "Intestinal Gardening for the Prolongation of Youth", 1938.

"We must account, then, for these symptoms through the fact, that when the action of one of the eliminating organs of the body is destroyed, there is an attempt to compensate for the loss by a corresponding action on the part of the other Emunctories. Thus, the sudoriferous glands being very extensively implicated in this case, the vitiated blood was thrown, to an unnatural extent, upon that portion of the mucous membranes which is exposed to the air; this excessive determination of blood being followed by congestion and inflammation of the tonsils and fauces, which gradually involved the whole respiratory mucous tract, and resulted in effusion." - Dr G. G. Gascoyen, MD in "St. Mary's Hospital Case of Small-Pox Occurring Twice in a Patient within a Period of Six Months", Association Medical Journal, 23 February 1856.

Chapter 20

Sir William Osler on Health & Disease

Harvey Cushing in "The Life of Sir William Osler", 1940

"The various organs, the diseases of which are subdivided for treatment, are not isolated, but complex parts of a complex whole, and every day's experience brings home the truth of the saying, "when one member suffers, all the members suffer with it". (Goes for families and communities, too)" P. 361

"Humanity has but three great enemies: fever, famine and war; and of these by far the greatest, by far the most terrible is fever... etc." P. 435

"No other disease kills from one-fourth to one-third of all persons attacked; and 'so fatal is it, that to die of pneumonia in this country is said to be the natural end of elderly people." P. 460

"the curious tendency of physicians to become victims of the malady in which they have specialized" P. 479

"In an extemporaneous address the Albany, NY medical student in 1899 he addressed the need of cultivating the head and the heart. "There is a strong feeling abroad among people - you see it in the newspapers - that we doctors are given over nowadays to science; that we care much more for the disease and its scientific aspects than for the individual.

I don't believe it, but at any rate, whether the tendency exists or not, I would urge upon you in your own practice, to care more particularly... for the individual patient than for the special features of the disease.... Dealing as we do with poor suffering humanity, we see the man unmasked, exposed to all the frailties and weaknesses, and you have to keep your heart soft and tender lest you have too great a contempt for your fellow creatures. The best way is to keep a looking-glass in your own heart, and the more carefully you scan your own frailties the more tender you are for those of your fellow creatures." P. 489-90

"(Osler with a patient) She was an old woman of 75 in hospital for acute rheumatism, who also showed a wind tumor of the Steno's duct the size of a walnut, which she could inflate and deflate at pleasure. Osler said it was the second one he had seen. Both of these conditions, however, were incidental to her general history.

"Mother" said Osler, 'I would like you to tell Dr. Walsh something about your past life. When were you first in hospital?' 'At 27. 'What was the matter' 'I had a sarcoma of the right knee' 'What did they do for it?' They cut off the right leg at the hip. 'Did you get entirely well? Yes, entirely well. ' When were you in again?' ' At 42. I had cancer of the breast. They cut off the left breast and the left arm. After that I was entirely well. 'What are you in the hospital for now?' 'For rheumatism; and Doctor,' she said with tears in her voice and catching his hand, 'I hope you will make me well in a hurry, because I have to go home to take care of my grandchildren.' Osler, in short, never forgot the patient in his interest in the malady." P. 492

"A third noteworthy feature in modern treatment has been a return to psychical methods of cure, in which faith in something is suggested to the patient. **After all, faith is the great lever of life.** Without it man can do nothing. **Faith in us, faith in our drugs and methods, is the great stock-in-trade of the profession.**

In the one pan of the balance, put the great pharmacopoeias of the world... in the other put the simple faith which from the days of the Pharaohs until now the children of men have swallowed the mixtures these works describe, and the bulky tomes will kick the beam. It is the aurum potable, the touchstone of success in medicine.

As Galen says confidence and hope do more than physic: "he cures most in whom most are confident"... We doctors often overlook or are ignorant of our own faith-cures, we are a bit too sensitive about those performed outside our ranks.

We have never had, and cannot expect to have, a monopoly in this panacea, which is open to all, free as the sun, and which may make of everyone in certain cases...'a good physician out of Nature's grace'. Faith in the gods or in the saints cures one, faith in little pills another, hypnotic suggestion a third, faith in a plain common doctor a fourth. In all ages the prayer of faith has healed the sick, and the mental attitude of the suppliant seems to be of more consequence than the powers to which the prayer is addressed. The cures of the temples of Aesculapius, the miracles of the saints, the remarkable cures of those noble men the Jesuit missionaries,... and the wonder-workings of the so-called Christian Scientists, are often genuine, and must be considered in discussing the foundations of therapeutics. We physician use the same power every day... We enjoy no monopoly in the faith-business. (can be found in Aequanimitas)" P. 546

"Credulity in matters relating to disease remains a permanent fact in our history, uninfluenced by education. But let us not be to hard on poor human nature. Even Pericles, most sensible of men, allowed the women to put an amulet around his neck. (and this goes on in tis vein)..... he looked over the large literature on the subject of 'faith healing':

> *In all ages, and in all lands, the prayer of faith, to use the words of St. James, has healed the sick; and we must remember that amid the Aesculapian cult, the most elaborate and beautiful system of faith-healing the world has seen, scientific medicine took its rise.*

As a profession, consciously or unconsciously, more often the latter, faith has been one of our most valuable assets, and Galen expressed a great truth when he said:

"He cures most successfully in who the people have the most confidence. It is in these cases of neurasthenia and psychasthenia [in these days chronic fatigue syndrome, fibromyalgia, etc.] the weak brothers and the weak sisters, that the personal character of the physician comes into play, and once let him gain the confidence of the patient, he can work the same sort of miracles as Our Lady of Lourdes.

Three elements are necessary:

1. First a strong personality in whom the individual has faith - Christ, Budda.... or, what has served the turn of common humanity very well, a physician.
2. Secondly, certain accessories, a shrine, a sanctuary.... or, for us, a hospital or its equivalent with a skillful nurse.
3. Thirdly, suggestion, either of the 'only believe', 'feel it', 'will it', attitude of mind which is the essence of every cult and creed, or the active belief in the assurance of the physician that the precious boon of health is within reach." P. 867

" "Angina in Doctors" "A point that stands out prominently in my experience is the frequency of the disease in our profession. For the same reason, doubtless, that Sydenham gives for the incidence of gout, "more wise men than fools are afflicted" angina may almost be called 'morbus medicorum'.... the frequency with which doctors die from the disease has become the subject of common remark. From John Hunter onwards, a long list of most distinguished men have been its victims. In a group of 20 men, every one of whom I knew personally, the outstanding feature was the incessant treadmill of practice; and yet if hard work - that 'badge of our tribe' - was alone responsible would there not be a great many more cases?

Every one of these men had an added factor - worry; in not a single case under 50 years of age was this feature absent. Listen to some of the comments I jotted down of the circumstances associated with the attacks:

'A man of great mental and bodily energy... involved in speculations in land', domestic infidelities; .... troubles with the trustees; lawsuits, domestic worries, and the case goes on. At least 6 or 7 men of the sixth decade were carrying loads light enough for the fifth, but too much for a machine with an ever lessening reserve...." P. 899

"Of all the blows of circumstance that may help to temper a man;s metal, chronic illness is the most uncertain in its effects.... Now and then men are fortunate enough to overcome the worst foes encountered in the battle of life - chronic ill health and an enforced residence in a paralyzing environment." P. 911

"The epidemic of influenzal pneumonia will be well remembered [1918], for it was world-wide... and the Regius Professor... became engaged for one of the few occasions in his life in the actual house-to-house practice of medicine. He had his own ways of doing this and with children was a veritable Peter Pan.

[A little child's mother writes:] He visited our little Janet twice every day from the middle of October until her death a month later, and these visits she looked forward to with a pathetic eagerness and joy. There would be a little tap, low down on the door which would be pushed open and a crouching figure playing goblin would come in. Instantly, the sick room was turned into a fairy land, and in fairy language he would talk about the flowers, the birds and the dolls.... In the course of this he would manage to find out all he wanted to know about the little patient.

The most exquisite moment came one cold, raw, November morning when the end was near, and he mysteriously brought out from inside his pocket a beautiful red rose wrapped in paper, and told how he had watched this last rose of summer growing in his garden and how the rose called out to him as he passed by, and she wished to go along with him to see his little lassie.

That evening we had a fairy tea party... Sir William talking to the rose, his 'little lassie', and her mother in a most exquisite way; and presently he slipped out of the room just as mysteriously as he entered it, all crouched down on his heels; and the little girl understood that neither fairies nor people could always have the colour of a red rose in their cheeks, or stay as long as they wanted to in one place, but that they nevertheless would be very happy in another home and must not let the people they left behind, particularly their parents, feel badly about it; and the little girl understood and was not unhappy." P. 1306

A Note on Epidemics

In regards to epidemic as these may exist in certain periods, serums may be taken that for prevention of Typhoid for example.

For the problem of all epidemics is not the germs as such, but the condition that is in a given body, where pre-disposition is for trouble with digestive system.

So the avoidance of over-eating, specially in those occasions of festivity, which there is that tendency in the population to gather and over-eat, moderation is the key. And the cleansing of the gastrointestinal tract is paramount.

Treatment of Typhoid Fever

"Maillart (Rev. de Med., November 1893), begins a study of cases of enteric fever (typhoid fever) treated by the internal administration of large quantities of water.

The first object of treatment is to destroy the micro-organisms, but failing this the action of their products must be neutralised.

These toxalbumins are excreted by the kidneys. In enteric fever the urine is diminished in quantity, and the skin does not act, hence the object should be to encourage these Emunctories.

In order that a large quantity of water should be excreted, a large quantity must be provided. Water can be supplied by rectal injections, but the simplest way is to make the patient drink copiously.

The author endeavours to ascertain the effect of this treatment on the different symptoms in 14 cases of enteric fever minutely studied.Only 1 case died.

The patients take to this treatment readily.

Exceptionally as much as 16 litres were taken in the day. The mouth became moist, and the trouble in swallowing owing to dryness of the pharynx disappeared. Thus antisepsis of the mouth is more easily effected. The stomach tolerates this treatment; in exceptional cases vomiting occurred at first, but this soon ceased. The diarrhoea was not increased.

The water was excreted by the kidneys and skin, the quantity of urine being greatly increased." - in "The British Medical Journal", 24 February 1894.

The Process of Immunization Through Typhoid Inoculation

"The process of immunization through typhoid inoculation can therefore readily be compared to the process of nature in its efforts to overcome an attack of typhoid fever.

The typhoid bacilli are fed into the circulation, having multiplied in the liver, kidneys, spleen, and bone-marrow; this is the stage of auto-inoculation.

The bacilli undergo destruction in the blood stream by the action of the bacteriocidins and bacteriolysins; endotoxins are liberated, causing the period of high temperature and toxic symptoms.

The endotoxins and other products of the metabolism of the bacteria are diluted by the whole volume of blood, and act upon the body tissues, in a form so diluted as to develop only tardily from these tissues the antibodies necessary for an immunizing response.

On the other hand, when killed bacilli are injected into the tissues, the endotoxins liberated following bacteriolysis produce a local toxic effect, and the same tissues give out a rapid local production of immune bodies which find their way into the blood.

In both cases the tissues receive the full toxic effect; the difference lies in the fact that in auto-inoculation the tissues develop a slow immunizing response, whereas in the injection of killed bacilli the tissues develop a rapid immunizing response." - Dr Charles W. Luders, MD, in "The Theory and Effect of Vaccine Therapy in Typhoid Fever, with Report Cases", The Therapeutic Gazette, 15 October 1913.

Chapter 21

Medicines in General

"In all cases of disease, Nature Herself continually strives to bring back a state of health, and the object of medical treatment is, to assist this natural effort.

If the medicine acts one way, while nature is acting another way, it not only does no good, but possibly much harm.

And this has really been the case with much of the past medication. Nature would be trying to bring matters right by thowing out an eruption, by a diarrhoea, or a profuse perspiration, and the doctor would immediately step in, with his medicines, to stop all these operations, which he mistook for the disease itself.

The consequence was that nature's efforts were all counter-acted, and she had the effects of the medicines to fight against, in addition to the disease.

> *"Drugs never cure disease. They merely hush the voice of nature's protest, and pull down the danger signals she erects along the pathway of transgression. Any poison taken into the system has to be reckoned with later on even though it palliates present symptoms. Pain may disappear, but the patient is left in a worse condition, though unconscious of it at the time." - Daniel. H. Kress, MD.*

No doubt many thus died, from being doctored, who would have lived had they been let alone.

Chemical versus Nutritive Medicines

Different Kinds of Medicines

When the medication assists, or regulates, the proper natural effort, it may do much good; and this, therefore, is the important point to aim at.

Anything which acts as an assistant, in the restoration of health, is a medicine, whether it be a material substance or merely a nervous or electrical influence.

Medicines, therefore, are of different kinds, and act in different ways, according to their nature, and to the circumstances in which they are given.

Chemical Medicines

In some cases medicines are given to effect direct chemical changes, as when we give alkalies in sour stomach, or acids when there is too much alkali in the blood.

But much of the chemical medication is a great mistake, founded on ignorance

of the actual chemical state of the bodily fluids, and of the changes which the medicines undergo after they are taken.

It is but seldom that medicines can be given, with any certainty, to cause direct chemical changes in the living body, and much and serious evil is being done constantly in the attempt.

Nutritive Medicines

In other cases medicines are given to supply some element, in which the body is deficient.

Thus, in some impoverished states of the blood, we find it is deficient in iron; and if that metal be then given, in a proper manner, it soon causes an improvement.

In other cases lime is needed, or phosphorus, and the proper administration of these substances is then beneficial.

In this case the medication is a species of nutrition; and, if we know what really is needed, and can give it in a proper form that is, in a form that the organs can make use of we can effect much good.

Sometimes it is not very obvious what element the body does need, though it is obvious something is deficient; and this is one fruitful source of mistake and wrong treatment.

Very frequently, also, the element is given in a wrong form, and the system can derive no benefit from it.

Many of the metallic compounds, given as nutritive medicines, are thrown out of the body in the same state they were taken.

Others are decomposed, combine anew, and act totally different from what they were intended to do.

It is only in certain states, or chemical conditions, that such matters can be absorbed, and carried into the circulation, a fact which is often lost sight of.

Neuropathic or Nerve Medicines

The greater part of the medicines taken are intended to act neither chemically, nor as nutritives, but simply as regulators of the organic functions.

And this regulation they effect by acting on the nervous centres, either directly or in-directly, in such a manner as to increase or decrease the force of the nervous current, according as may be needed.

Thus, such medicines as diuretics, and purgatives, for instance, irritate the kidneys, or intestines; and this irritation, being conveyed to the nervous centre, excites a reflex nervous action, which causes those organs to act more energetically.

In all cases where any organ is excited, by medicines, to increased action, it is only in this way.

The medicine does not directly cause the increased action, but it irritates the

sensor nerves of the organ; and these, by conveying the impression to the nervous centre, cause a reflex action, and the transmission of a more powerful nervous current to the seat of irritation.

Most people suppose that it is the medicine itself which acts directly on the part, but this is a mistake.

It is the nervous influence only that acts, and the medicine merely sets it indirectly in motion.

If the nerves connecting the stomach with the nervous centres were cut through, no emetic, no matter how powerful, could excite vomiting.

But with these nerves perfect, a mere thought, or emotion, will do it, as has been before shown.

Medicines can also be given to act directly on the nervous centres themselves, to either increase or decrease their organic action, according as they are torpid or over active.

Such stimulants as alcohol, tea, and coffee, and all the various narcotics, are remedies of this kind.

These constitute, in fact, the most important class of medicines, the proper use of which is comprised in the practice of Neuropathy.

Excepting when used chemically, therefore, or as nutritives, all kinds of medicines act through the nerves; only in ordinary medication they do so indirectly, by reflex action; and in the Neuropathic practice they may act directly as well, by operating at once on the substance of the nervous system, which they are enabled to do owing to their form." - Dr. Frederick Hollick in "The Nerves and the Nervous", 1873.

On the Use of Specifics and Their Method of Functioning if to be of any Usefulness

"Robert Boyle in his treatise Of the Reconcileableness of Specific Medicines to the Corpuscular Philosophy, Boyle set down his arguments for preferring specifics and provided a feasible explanation for their action on the basis of the corpuscular hypothesis.

He noted the various ways in which specifics may be curative:

1. By "resolving" certain types of morbific matter, making it fit for expulsion;
2. By "mortifying" the overacidity of particles infesting the mass of the blood, which cause undue coagulations (these coagulations, of course, impeded motion);
3. By precipitating peccant matter out of the fluid parts of the body;
4. By strengthening the heart or other organs (so that the body's own resources would become strong enough to counter the illness);
5. By producing in the blood such motions as to allow it to correct or expel the morbific matter or other cause of disease;
6. By "neutralizing" the peccant matter so that it becomes harmless even if not expelled." - B. B. Kaplan in "Divulging of Useful Truths in Physick", 1993.

Chapter 22

Treatment of Chronic Disease

*"John Madison Taylor, AM, MD, emphasizes the necessity, in the management of chronic affections in general, of raising to their highest efficiency all the functions of the body through the practice of what he terms "**Reconstructive Personal Hygiene." This comprises such measures as the attainment of mental and emotional rest, diet, skin friction and bathing, colonic irrigations, systematic education of the respiratory function, massage, and elastic support of relaxed structures.** The possibilities of a combination of such measures lie in rendering available latent, undeveloped energies in various parts of the organism and thereby aiding the body to resist the inroads of the chronic disease present, whatever be its seat." - in "New York Medical Journal", Vol.95, 1912.*

Reconstructive Personal Hygiene & Human Conservation

"My personal attention has been directed to the capabilities of intensive personal hygiene for 30 years. Every person, young or old, is capable of an appreciable increase in vital dynamics by revising modes of life.

Some of these deviations from integrity merge into serious retrograde changes, often shown by local rigidities, densities, caused partly by faulty habits or vitiated automatisms, due to omissions of suitable variety in both impulses and energizing whereby alone symmetrical action and reaction are assured.

The human organism is admittedly a marvel of interacting, vitalized parts, mechanisms, and forces, a well-balanced organism, and, to quote a former paper of mine, the body is a concrete, living entity, not a mere aggregation of separate parts, like an insentient machine, any one of which is capable of acting and reacting independently of the rest.

In the human machine, wherever there is local damage or derangement this can be removed only by eliciting the full cooperation of all the component mechanisms, and being aware of the interdependence of every part.

Now here is the significance of this cooperation more direct and important than in the treatment of protracted disabilities, and for many reasons.

Take traumata - fractures, wounds, and other strictly localized damagements -

the remainder of the organism is presumably at the time in a state of full integrity (hence with full capacity for prompt and complete repair), whereas

conditions are otherwise in protracted, long-prevailing disorders; the results being manifest in slow but steady disintegration of tissues-in the retroaction caused by depression in both the psychical and physical spheres of activity.

In acute disease, notably the infections, there is fever, a defensive process whereby the autoprotective forces are aroused to the performance of their most perfect work.

The problem is then relatively simple, the organism being presumably normal when infected.

But in chronic disease the defensive powers are gradually overwhelmed, and cannot be relied on to promptly meet and overcome morbific agencies.

Not only this, the causal factors become increasingly complex - a blend of psychic confusion and loss of physiologic conservation.

Therapeutic agencies must, then, include systematic encouragement of all functions, rehabilitation of the whole system.

Chronic morbid processes, while of wide diversity and due often to special diseased entities, none the less are at bottom mere outgrowths of vitiated physiologic processes.

Physiologic processes are uniform in their manifestations, not only when normal but also when deranged.

The human organism is disturbed by disease, of whatever nature, along strictly analogous lines. The special features may and do vary, but chiefly in accordance with the structures altered, rather than by reason of the nature or character of the disease itself, and the organism, as a whole, is usually capable of recovering a fair measure of efficiency." - Dr J. Madison Taylor, AB, MD, Associate Professor of Non-Pharmaceutic Therapeutics in the Medical Department of Temple University, Philadelphia, Pa., in "Human Conservation, a Neglect Field for Medical Specialization", International Clinics, 1915.

Fibromyositis or "Rheumatic Conditions"

"Let us visualize this group of sensory disorders under one graphic term-fibromyositis which well describes those miseries called by the misleading term "Rheumatic", Myalgic, Oxypathic, Arthritic, Lithemic, and the like.

Along with these closely associated or concurrent muscle sicknesses (Myopathic or Myogenic Phenomena) there occur disturbances of the gross reflexes.

Among which are:

1. Spasm
2. Contracture
3. Tenderness
4. Dermal & Subdermal "soreness"
5. Flatulence
6. Sometimes Tremor
7. Multitudinous Vasomotor Imbalances

Many other system disturbances are likewise encountered as correlates or resultants of these sensoripathies, such as those of innervation, of

respiration, of circulation, of digestion, or genito-urination, also morphologic deformations, lamenesses, and also a diversified group of psychoneuroses

or disorders of personality.

These psychophysical bewilderments deserve attention from a common etiological source, or point of departure, as well as from shocks produced upon or within their special mechanisms and regulative agencies.

The uniform point of departure is presumably one of disordered biochemistry, of metabolism (or impaired catabolism) usually of the governing or regulative mechanisms, hypo-or hyper-function of the ductless glands.

Among the distresses or disabilities referable to fibromyositis are:

1. Headaches
2. Backaches
3. Lamenesses
4. Diverse Intra-articular Stresses
5. Restrictions of movement (often not recognized as pain states)
6. Contractures
7. Deformations
8. Faulty attitudes
9. Psychogenic as well as morphogenic confusions
10. Intestinal Inflammations
11. Appendicitis

Any one of these may follow, seeming to be the effects of acute disorders of varied origins. Referred pains, while due to particular causes, are many times aggravated by fibromyositis. Sometimes there are osteophytic proliferations with decalcification of vertebrae, but even then biokinetic treatment can effect cure.

The means of restitution lie in 2 chief directions: dietetic or metabolic regulation, and the resources of reconstructive (biokinetic) measures.

Of these, the latter are most prolific of relief and the former for removing the underlying causes and staying progress.

Indeed, if the condition has progressed far enough there is only one means of radical emancipation, viz., by revision of conduct through reconstructive personal hygiene, including education of the skin and muscles.

My experience leads me to believe that without a thorough marshalling of reconstructive, especially manipulative, measures, rheumatic states will persist or recur.

Sometimes counter irritation is necessary-local freezing is best, strong iodine or cantharides covered by zinc oxide plaster.

The colon should be irrigated with water, better 15 or 23 litres by a 2 way tube, in and out, and in and out again, till the whole gut is clean; this should be repeated every other day for 2 weeks. Salt (NaCl) and sodium carbonate, may be added with advantage.

A fibromyositis is often the essential process when symptoms point reasonably toward more serious diseases or disorders.

A fibromyositis may be acute, and when prolonged may be accompanied by moderate febrile reaction, so large and complex are the sources or origins.

It is then obvious enough, as in a sharp attack of myalgia of the lumbar muscles, the scapulars, the pectorals, muscles of the scalp, neck, and the like.

The frequently recurring tenderness of the erector spinae muscles, indicating irritation in the rami, are, in my opinion, of the nature of fibromyositis.

To be sure, they point to irritations in the spinal subcenters and these must be relieved in order to cure associated miseries or diseases.

Also there are often intraarticular irritations involving the arthrodial or amphiarthrodial structures, costocentric, between the discs or at rib junctures.

Fortunately manipulative treatments work both ways; not only by dissipating the local tenderness but also by reflexly stimulating vasomotor activities in the subcenters and thereby contributing to the nutrition in the disordered peripheral locality.

Likewise mobilizations of the vertebrre, the intervertebrre, costocentral, vertebrocostal, and vertebrosternal junctures often contribute to restoration of function.

We should Differentiate Between Neuralgia and Myalgia

In neuralgia painful points are found in the nerve, at the outlet or in continuity-where nerves emerge from bone especially. After being relieved there is no further immediate tenderness in myalgia; in neuritis there usually is.

In myalgia pain is located in the body of the muscle, especially at its thinnest part, where most expanded, and is always distributed over a larger area than is that of neuralgia; tenderness persists over inflamed nerves between attacks.

A zone of hyperesthesia or hyperalgesia exists which does not parallel the nerves.

Myalgic points or areas correspond to where muscle blends into fibrous structure or tendon.

Myalgia often simulates Angina Pectoris (Peritz), Acute Gastritis, especially when the belly is distended with gas.

Also it simulates cholecystitis, appendicitis, sacroiliac disorder.

A "sciatica" is often triumphantly detected, which in reality consists of fibromyositis in the muscles of the gluteal region, especially of the brim of the pelvis; also of the small lumbar attachments.

Many lamenesses arise in muscle tenderness in the gluteal muscles and fibrous attachments to be detected only by expert finger explorations; they are curable readily enough by persistent manipulation.

Indurations, infiltrations, thickenings are exhibited, giving evidence of chronic myositis at points of lodgment.

Certain stages are shown:

1. Swelling, elasticity, sometimes glossiness of skin.
2. Bogginess, edema, a doughy feeling;
3. Densities, rigidities, spasm, passing with age into ligament-like cords, which are tender to touch. These cord-like, stringy structures are characteristic of fibromyositis. They also are evidences of disturbed states (reflex spasm from a peripheral lesion) in paravertebral structures.

In older forms of fibromyositis with passive tenderness as well as active sensitiveness, the organism becomes so adjusted that the sensory responsiveness sinks below the threshold of consciousness; hence is operative in causing vague, unidentified distress, weariness, sleeplessness, aching, infirmity, atrophy, decrepitude, and mental depression or confusion.

The origin of a deep seated psychopathy may often be found by tactile exploration as a muscle tenderness.

There may be no active sensory response; the awareness may be subordinated and brought out only by carefully directed tactile explorations, or by movements active or passive, and especially when fatigue or exhaustion coexists.

Favourite seats of Myositic thickenings are:

the head (scalp), neck, in and about the knee, hip (sciatic area), shoulder and ankles, wherever muscles overlap; inside the elbow; insertion of the pectoralis major, of the latissimus dorsi into the humerus, the intercostals, of the abdominal

wall, the crest of the ilia, the glutei or the gemelli. Indeed, the buttocks are a fertile ground for fibromyositic complexities variously named, generally hindering locomotion.

The diagnosis of latent forms of fibromyositis is largely by expert tactile apperception (an educated finger tip).

The relief and cure, as said, lie in 2 directions:

1. Digestive (metabolic) regulation.
2. The varied resources of reconstructive measures. Especially useful are: heat, pressure, manipulation, separation of fibers by hand, or counterirritation by blistering or cautery.

Indeed if the condition has lasted long, and complications have progressed far enough, there is only one reliable means of emancipation, viz., through the resources of revised conduct, personal hygiene, improving habits, notably by attention to skin, and muscle training, passive and active.

Never omit thorough bowel washings.

The most puzzling problems are those in which an obvious fibromyositis refuses to be cured, although much relieved, and other obscure phenomena persist.

In most such instances there may be assumed a chronic irritation in the cell bodies of the cord from which the vasomotor nerves arise which supply the distressed part. The form is often a protective tonic spasm, usually detectable as a cord-like mass. When it is duly located, and after due attention is directed to the subcenter, one may effect a permanent cure, e.g., by freezing the area two or three times, or by exerting some powerful mechanical stimulus to the part whereby adhesions are freed and the nerve outlets (gray rami) resume their functions unhindered.

Of the many forms of reliable treatment some are described later. In any event some expert (really expert) manipulation serves as an efficacious, almost necessary, adjunct. The main object is to relax the tension (protective spasm) in the affected structure, to diffuse the local stagnation, and stretch the muscle fibers from center to affected locality.

In most instances manipulation should be applied as nearly as possible to the origin of the muscle, where the main nerve enters the mass, not neglecting the belly or mid-portion nor the insertion.

Hand treatment should aim to empty the spastic muscle of vitiated lymph and blood; should be applied not too long at a time - 2 or 3 minutes with intervals to let the patient rest from the pain induced, and then repeat two or three times; total 5 or 8 minutes.

They should be again done on the same day or on successive days, being guided by the degree of “soreness” produced.

In the case of tonic muscle spasm often large sudden movements forcing the part first in one direction, then quickly back again, will throw a long disused part first out of its false position, then back into a normal one.

This often overcomes the chronic spasm. **It is by such means that the miracles of "replacement" of the bone setters are produced.**

In the chronic and obdurate forms treatment should be repeated at least twice a week, gradually increasing the force and depth of pressure, and length of seance.

Manipulation should always be followed by active movements made by the patient, and by carefully directed functional training to secure accuracy in action and to equalize the coordination.

Movements should be made in accord with laws of "protective reactions" and "distributing the direction of the load"; with due consideration to states of contracture or relaxation-tonus or hypertonus, also intra-articular pressure or irritation which I have described elsewhere. A particularly important accessory measure is expert muscle training in exact directions and degrees of force. By this means confidence is restored as well as adhesions and contractures overcome.

It is common to meet sufferers who have been admonished to make no movement which causes pain. The truth is when a movement causes pain that movement should be made repeatedly with increasing force.

The skin should be educated to protect itself and the hypersensitive muscles from chilling by friction with a dry towel on rising and on going to bed; also by gradations of exposure to air and by alternations of heat and cold, as by hot and cold douches.

Dry skin friction is vastly superior as a tonic to the peripheral circulation than is bathing in any form. The late Weir Mitchell frequently used a "salt towel", i.e., a coarse "kitchen towel" dipped in salt water and dried, for friction.

Summary

1. Keep in mind that any obscure muscle pain, brief or protracted, or lameness, or morbid alteration of posture, or gait, or restriction of posture or movement, or tenderness, may be due to fibromyositis; hence determine by critical palpation what the afflicted or suspicious areas may reveal.

2. Relief of these local disordered conditions, whether painful, tender, or structurally significant, may clear up the matter; or in any event simplify the problem.

3. Cure of a fibromyositis may contribute materially to the limitation of any existing collateral disorder or "transferred pain" by the removal of sources of reflex irritation or "protective spasm", or by reducing the sum total of morbid factors present.

4. Local hypersensitiveness in muscle masses, due to any one of a large variety of primary or secondary causes, frequently is exhibited in the form of a fibromyositis, revealing other coexisting factors, such as a focal sepsis, a central irritation, or a peripheral diseased state.

5. Cure of the local manifestation may be achieved by revising and regulating conduct through personal hygiene, by modifications of diet, regulating exertion, reducing fatigue, especially exhaustion from excessive repetitions of monotonous motions as caused by restricted acts in labour; by accustoming the patient to abrupt exposures to temperature changes and by generally equalizing expenditures of force through salutary modifications in habits in accord with rational demands for activities.

6. In treatment, whatever other curative agencies are employed, don't omit to consider thorough colon irrigations, nor deep manipulations, after careful determination of conditions in the affected area.

7. While constitutional derangements demand attention and regulation, the local anomaly should receive adequate care. Sometimes powerful revulsives are needed, by blister, cautery, freezing, iodine, etc., always followed by strapping with zinc oxide plaster. The main cure, however, is always by manual treatment directed to the neuromuscular mechanisms followed by faithful and varied exercises especially those which cause pain on movement.

8. After due attention has been afforded by suitable measures applied to the constitution, to special organs, and to the affected area, there remains a need for functional education, in the form of;

(a) Mental readjustment to the complex problems of chronicity, protracted disability, and previous disappointments, loss of confidence in performing movements, etc.,

(b) Re-educating the bewildered muscles to do their appointed work with precision and confidence.

9. Finally, the individual who suffers at any time from fibromyositis needs to learn and to practise thorough hygienic habits essential for his or her “diathesis” or “type of tissue cells” or “dyscrasia” or peculiarities of neuromuscular adjustments, or capabilities of elimination.

Among the first of these good habits (euthenics) is to live as much as possible out of doors, in all weathers, maintaining reasonable activities and, while not over-fatiguing, yet to beware of the one unpardonable sin of physical and mental stagnation, deterioration from disuse.

Every day such sufferers should exert themselves so that they sweat fairly or freely.” - Dr J. Madison Taylor, AB, MD, Professor of Applied Therapeutics, Temple University Medical Department, Philadelphia, in “Medical Record”, 28 June 1919.

Conditions Rather than Diseases to be Treated

"It is customary to classify the various injuries which affect the body under the heads "Mechanical", "Physical", or "Chemical", but in the last analysis all injuries register in the same area and in the same way. **My experiments have shown that no effect of a blow is apparent until the force of the impact reaches the visceral area.**

Violent impact results in abrupt change in the visceral circulation, while a series of light percussions on the body surface is followed by a similar but more gradual stasis of the venules of the liver, lungs, stomach, and intestines.

Shaking the animal, or discharging a shell in the air or in water in close proximity to it, produced identical symptoms. **No matter what the injury might be the results were the same, differing only in degree.**

Furthermore, fresh resected portions of the viscera such as loops of the intestines or pieces of the voluntary muscle tissue, when subjected to the same shock impulse, displayed the same coagulation of the tissue fluids and blood.

My experiments also show that no effect from cell necrosis was apparent until the polypeptids that resulted reached the visceral area, producing the identical condition of the colloids as occurred in impacts or mechanical blows.

Precisely the same congestion or stoppage of the blood current in the viscera, e.g. stomach, intestines, liver, and lungs, occurred when there was disintegration of the body tissues resulting from mechanical or chemical injury.

This disintegration always resulted in the formation of polypeptids.

Wound injury may be produced by chemical means such as chloroform, because chloroform causes cell necrosis.

Other agents will produce the same cell necrosis, such as burns, cauterization by chemical means; in fact, any agency which leads to cell disintegration will produce identical polypeptid products.

It will thus be seen that as disease phenomena occur primarily and principally in the tissue cellular area the coagulation extends from the tissue fluids to the contents of the capillaries, it lies outside of the vasomotor control.

The general pathology of the condition following absorption of the products of native cell necrosis (iso-autolysis) may be simply summarized in the general pathology of "peptone shock".

Mechanical, physical, or chemical injury results in cell necrosis and autolysis.

The absorption by the organism of these products results in the pathological conditions we have described.

The symptom complex varies and is determined by the physiological factors involved.

Destruction of tissue results in cell necrosis, cell digestion, and specific toxic products. Destruction of tissue from injuries admits secondary invasion by bacteria which increases the velocity of cell necrosis and cell digestion, augmenting the production of the toxic products.

The results of these experiments make the fact stand out boldly that; **the role played by the bacteria is simply to increase the amount of toxins produced by increasing cell digestion, and that the cell toxins produced are the agents causing the further necrosis and against which immunity is to be established and not against the bacteria.**" - Dr Fenton B. Turck, MD, in "The Role of Cell Necrosis and Bacterial Invasion in Surgery", Medical Record, 22 March 1919.

Remarks on the Treatment of Chronic Disease

With Special Reference to Simple, Efficacious Remedial Measures Readily Applied, but Often Neglected

"There is nothing which so conduces to length of years as an incurable malady?" - Oliver Wendell Holmes

"Many effective methods are known for relieving and curing chronic disorders.

Some are better than others, but the best are no better than the worst unless pursued with consistency, persistency, and, above all, appreciation of the physiologic factors involved.

All remedies for diseases are valuable in proportion as they render available inherent self-protective and self-reparative powers.

The body, moreover, is a concrete, living entity, not made up of separate parts, like an insentient machine, any one of which is capable of acting and reacting independently of the rest.

In the sentient human machine, wherever there is local damage or derangement this can be removed only by eliciting the full co-operation of all the component mechanisms, and being aware of the interdependence of every part.

Nowhere is the significance of this co-operation of all parts more direct and important than in the treatment of protracted disabilities, and for many reasons.

Among these is that, whereas in traumata - fractures, wounds, and other strictly localized damagements - the remainder of the organism is presumably at the time in a state of full integrity (hence, with full capacity for prompt and complete repair), conditions are quite otherwise in protracted, long-prevailing disorders; the results are manifest in slow, but steady disintegration of tissues, - in the retroaction caused by depression in both the psychic and physical spheres of activity.

Unless the individual is regarded as an allround well-balanced organism, with full consideration of all the essential factors constituting Health (not forgetting permissible variants), the best results cannot be attained, either in conservation or repair. In acute disease, notably the infections, there is fever, a defensive process whereby the autoprotective forces are aroused to the performance of their most perfect work.

Much can be done to control and direct them.

The problem is then relatively simple, since the organism is presumably normal when infected.

In chronic disease, the defensive powers are gradually overwhelmed, the vital forces exhausted in varying directions and degrees. No longer can they be relied on promptly and efficiently to meet and overcome morbific agencies.

Not only so, but the causal factors become increasingly complex, a blend of psychic confusion, loss of physiologic conservation, and structural disintegration.

Be the factors few or multiple, the whole symptom-complex becomes one of impairment not only of the governing vital mechanisms, but of the entire organism.

Therapeutic agencies must, then, include systematic encouragement of all functions, rehabilitation not only of disordered noble organs, but of systems deranged as a whole.

Hence, the best remedies consist in conserving the action of circulation, respiration, metabolism, etc., not forgetting the inevitably impaired consciousness.

Mental deviations invariably occur in all protracted disorders and must not only be first considered, but in all stages reckoned with.

The circulation stands next in importance, and the fact that the skin area is the largest, most readily influenced factor in sensation and reflex irritation should never be lost sight of.

Respiration stands at the basis of oxygenation, but the muscular system is an efficient ally. Both require education and exercise.

The digestive organs, elaborate as they are, cannot carry out their complicated program unless they are, and remain, in full accord with the entire group of hydrostatic mechanisms.

They cannot act and react harmoniously unless they be, and remain, in normal, or nearly normal, mechanical interrelationships one with another, their centres, nerves, and connecting parts unimpaired by faulty position, torsion, compression, or by disarranged or inadequate support from relaxed or feeble external walls.

The integrity of the skeletal structures here exercises a powerful contributory influence.

Not only must these gross structures be maintained at their best, but wherever they suffer impairment beyond a certain degree the integrity of the vital processes suffers to an extent too generally overlooked.

Elasticity

Elasticity is an essential factor in all tissues, except a few, like the bones, ligaments, and tendons. Hence, loss of tissue-tone, rigidities, adhesions, excessive compressions, and relaxations are factors which demand full consideration in solving any problem of long-standing functional disrepair.

Morbid Process

Chronic morbid processes, while of wide diversity and due often to special disease entities, nonetheless are at bottom mere outgrowths of vitiated physiologic processes. Physiologic processes are uniform in their manifestations not only when normal, but also when deranged.

Disease

The human organism is disturbed by disease, of whatsoever nature, along strictly analogous lines.

The special features may and do vary, but chiefly in accordance with the structures altered, rather than by reason of the nature or character of the disease itself.

Growth, Change, and Repair

The essential machinery, the vital processes of life, growth, change, and repair, can, If rightly conserved, be made to do its work as well as the damagements present permit.

Hence, the organism as a whole is usually capable of recovering a fair measure of efficiency.

Thus, it is the duty of clinicians so to enhance the autoprotective and regulative mechanisms as to compensate for the specific damagements.

This truism may seem so obvious as to need no elaboration, yet clinicians too often overlook the fact that these deranged physiologic processes can frequently be so utilized and enhanced as to secure degrees and kinds of betterment not always otherwise obtained.

In brief, I maintain that there is urgent need of a well-rounded presentation of the clinical pathology of chronic processes.

So far as I can learn, this does not exist.

We want systematic generalizations on morbid physiology of protracted disorders.

This will prove of practical aid for clinicians in determining the character, scope, and remediableness of widespread losses in organic integrity.

Often closely analogous phenomena arise in persons suffering from morbid states widely divergent in essential pathology.

Our remedial resources in Chronic Disease depend for efficiency upon a correct appreciation of:

1. The particular disease process;
2. What remains of the reparative powers of the individual as a whole;
3. The degree and quality of the integrity of the structures deranged, damaged, or destroyed.

Among our medicinal agents there are a few, very few, drugs which are called specifics.

These fluctuate in our confidence, at times fail, and occasionally (as in the case of the loudly heralded Ehrlich remedy) open the door of hope.

The utmost they can accomplish in chronic disease is to unlock the avenues of toxic wastes, to overcome the specific agency so far as it continues to be forceful, and to free the organism of the immediate disabilities thereby caused.

At best their limitations are most narrow.

Always behind the toxic entity there is a damaged human organism, a suffering animal, whose recovery depends in the final issue upon how far it is possible to reawaken and redirect the inherent forces which sustain and maintain life.

Here is a field of opportunity, of scientific research, which, in my judgment, is not adequately explored; certainly not presented to the student as hopefully and systematically as the facts warrant.

Empiricism in these days of scientific advance is decried, yet the best results are often obtained by those who are equipped rather with good common sense, fortified by a practical knowledge of the physiologic resources of the organism.

Too often the ultrascientific physician belittles this phase of clinicism and his unrelieved patients wander to strange apostles of health and get well.

Every one of us has experienced this chagrin. Now how do these extramural healers, these loud-boasting pretenders, manage to make good.

Plainly, they appreciate, apply skilfully and confidently, well-attested empirical remedies directly along the line of obvious needs for the individual.

It has been my custom, whenever an unrelieved patient has left me and obtained satisfactory results at the hands of some irregular healer, to do my best to find out what was done and how.

My experiences would form material for an interesting paper. In every instance I learned something worth knowing.

Sometimes it was a new idea, a useful generalization, or a novel phase of well-known principles.

Having for 30 years had a keen desire to improve my therapeutic resources, I have preserved clippings from medical and other literature containing hints which appeared useful.

On reviewing these it is remarkable how many invaluable suggestions are to be found, insufficiently emphasized or made clear, yet, taken together, capable of adding much to our all too meagre means of restoring lost vigour.

From a wide reading on those subjects which constitute non-pharmaceutic therapeutics, it seems to me of use to present personal convictions deduced from experience to illustrate my contentions.

Clinicians do not seem fully to appreciate one fundamental principle in all therapeutics, viz.: the scope and efficiency of scientific personal hygiene and its special applicability in the treatment of chronic disease states.

In my lectures I group the subject under 3 heads:

1. Conservative Personal Hygiene; Including those well-recognized and commonly observed rules of conduct which are supposed to be known and accepted of all physicians.

2. Constructive Personal Hygiene; The selection and application of the best determinable means of so regulating human conduct as to raise the kinetic index to the highest dynamic possibilities, so that a practical equilibrium shall be attained.

A large subject this, the basis of which lies in taking a broad view of physiologic laws, the utilization and enforcement of which will go far toward raising any individual (of average vital integrity) to a higher plane of efficiency. Every individual possesses vast unelaborated or unappreciated potentialities never hitherto utilized, and which, it is the duty of the physician to estimate, and to teach how they shall be made available.

3. Reconstructive Personal Hygiene; The subject of the present communication, "Reconstructive Personal Hygiene" may include all those agencies and procedures whereby an organism below the norm of efficiency, deranged or chronically diseased, can be raised to a higher plane, of original efficiency, or restored from damagement or long-standing disease.

The dynamic index resides in the regulation of conduct. The coefficient of efficiency in each one is seldom known.

Personal hygiene may be defined as the scientific conservation and amplification of the body forces to secure potential equilibrium. The current conception is rather the practice of well-known rational measures for maintaining health.

There is ample evidence to warrant the assumption that constructive personal hygiene is itself a science, and fully deserves to be developed as the most promising agency in both prevention and cure of disease.

Adequately elaborated, it is capable of rendering increasing and almost limitless service to scientific medicine. Alone it can never suffice.

Its powers can readily be overestimated, they often are.

Recovery from chronic ailments will be achieved most largely by conservation of natural powers.

Here, again, we find the burden of evidence in favour of the efficiency of rational agencies, included under the term reconstructive personal Hygiene.

In almost every individual afflicted with protracted disease the latter is complicated by disorderliness in the mental and emotional spheres.

Unless these aberrancies are reckoned with, the springs of thought and action, and especially feeling, set in order, balanced, rendered more normal and

systematic, a large part of the symptom-complex persists.

The feelings, disordered as they are, need full consideration, skilled interpretation, and sympathetic direction.

The mind may be clear and efficient in some respects, but in others is not, and should be put into splints, rested, soothed, and restrained. Especially are responses to physical stimuli from within liable to be misinterpreted, the more important ones subordinated, and the lesser ones exaggerated.

Some lesions of gravity are wholly non-sensory; at least, awareness has not yet arisen to the threshold of consciousness (e.g., abscessed teeth, impactions, splanchnoptoses, and other latent lesions capable of exciting complex distresses).

Disturbances thus established between receptivity and determination have, then, become more or less automatic.

They exert a persistent effect on physiologic integration, aggravating any existing minor departures from the norm.

It may well be, as Charles L. Dana asserts, that there are no functional neuroses or psychoses.

Disorders so initiated vary in proportion to the progressiveness of the functional eccentricities and the susceptibility of the consciousness, its propensity to go astray, or aptness to dominate the physiologic processes; in short, complex diseased states depend for solution upon the subserviency of the body to the directing agencies, conscious or intuitive.

A reasonable familiarity with neurology and psychiatry would, then, seem to be a prerequisite in rightly handling chronic disorders.

Even as drugs in small or large doses exert different effects, both in kind and degree, so are physical or hygienic measures followed by good or ill in proportion to judicious, systematic, or to indifferent direction and employment.

Moreover, any remedy may at times act in a manner, or on a function, not expected or foreseen, for good or for harm, and this is often realized only by close observation (e.g., Thyroid extract in Insomnia due to vague gouty symptoms - Saline Enemata in Rheumatoid Arthritis - removal of Abscessed Teeth in Serious Psychoses, etc.).

Nutrition

The whole problem of nutrition is shown by Horace Fletcher and others to rest largely on how food is prepared, selected, and, above all, masticated.

High and low proteid dietaries, intestinal putrefaction, and the like questions settle themselves often by self-regulation of tastes or growing awareness of instinctive needs, learned through revised habits of eating.

Hydropathy

So skin hygiene, consistently utilized, is capable of more than conservation, even of radical reconstruction.

Facts brought accidentally to my attention have led me to secure unexpected and gratifying results by this means in manifold incurable states, as in:

1. Chronic Nephritis
2. Gout
3. Myositis
4. So-called Chronic or Muscular Rheumatism
5. Disintegration of circulatory structures and of the central nervous system

A diseased kidney is often normal in parts, and to its ability to regenerate there is no known limit.

The principle of action, briefly, is to insist upon skin friction, prolonged and thorough, daily or oftener, by the patient or another, with or without heat and cold, salt, or oily inunction's, or other adjuvants.

In this connection it may be remarked that habits of home bathing, even among the most intelligent, will often be found on scrutiny absurd or worse.

Judicious regulation of home Hydrotherapy can, and often does, secure gratifying and permanent effects on Circulatory Balance, notably the neutral immersion bath in Arteriosclerosis, Cerebral Excitement, Insomnia, and a wide group of hitherto-unrelieved disorganizations.

To relieve high vascular tension and the varied group of discomforts and dangers which follow, nothing is more efficacious than a neutral immersion bath, of 35°C to 37°C, for from half an hour to 2 hours.

Water Externally is Only Second in Importance to Water Internally

The history of Spa Treatment furnishes massive evidence worth studying.

Colonic Irrigation not only cleans out the lower bowel (made classic as a danger centre by Metchnikoff 1845-1916), **but also furnishes the best and simplest relief from toxic effects in many forms of genitourinary disorder.**

This diuretic action of colon-flushings - really invaluable - is alluded to in literature only incidentally, though it furnishes an excellent remedy in many Chronic Disorders where the Heart and Kidneys are competent, and renal inadequacy is a feature.

Of course, one should be careful to avoid overmuch of fluids in chronic nephritis and high blood-pressure with a weak heart (salt should not be used in this case).

Colonic Irrigations, employed in over a dozen bad cases, afforded a surgical friend of mine a curious and undesired reputation as a specialist in Rheumatoid Arthritis.

Respiration

Respiration, commonly regarded merely as an automatic function, is capable of education and development into a potent agency for conservation and reconstruction.

My own experience with systematic respiratory education has been gratifying, especially in strengthening bed-ridden, lame, or otherwise handicapped folk.

The use of this measure in chronic cardiac disease is plainly desirable.

This brings us anatomically to another auxiliary agency, which has apparently been left for me to emphasize, viz., increased elasticity of the skeletal, ligamentous, and other mobile structures as a factor in sustaining vigour.

The late Sir Herman Weber, of London, in a personal letter asserted as his opinion that I had pointed out in a paper (Popular Science Monthly, March, April, May, 1904) the most potent factor in the ageing of tissues - loss of elasticity - and in its conservation, the best means of securing longevity.

To secure results from respiration obviously the thoracic structures must be normally elastic (they seldom are in middle-aged persons), and also the abdominal muscles must preserve normal tone—they very rarely do.

Here educational exercises are required and accomplish much.

Correct Posture

Note one practical need for mobility which at first presentation may cause demur, though experience emphasizes its truth: In the spinal column originate and are contained 31 pairs of spinal nerves.

Between each two vertebrae lie cell-bodies closely concerned, among other duties, with vasomotor innervation.

It is of deep significance to the welfare of symmetrical vasomotor action that the erector spinae muscles, innervated as they are by the posterior primary divisions of the cord, shall be, and remain, normal and elastic.

Correct posture is a corollary of elasticity. This includes the whole subject of mutual interrelationships of the viscera.

Attitude

Attitude bears a close clinical relationship to normal functionation: e.g., defecation, parturition, etc.

Coincidently with this subject is to be mentioned the exceeding importance of scientific manipulations, nerve-pressures, which form the basis of the successful, but overstated claims of certain extramural cults designated by picturesque, pseudoscientific names.

Accident drew my attention to this subject 30 years ago, and since then I have placed on record my experience and convictions. Time and fuller experience

confirm me in my earlier views.

I am now prepared to urge the use of dexterous hand treatment — light, skillful nerve-pressures — as one of the most potent agencies in both diagnosis and treatment.

By it can be achieved the cure or relief of many morbid states possible in no other way known to me.

Physicians in the near future will realize the truth of this assertion. Hitherto the methods advocated, while at times efficient, have been of the crudest: e.g., unskilled massage, bonesetting, etc.

The effects produced by skilful finger-pressures on the erector spinae muscles are very patent and prompt. Blood-pressure can be raised or lowered.

The effects are most marked where tension is abnormally high, and the relaxation of the peripheral vessels is so pronounced as not seldom to induce free sweating.

This does not go further — never below normal for the individual.

The best results are seen in high tension due to disease of the heart muscle.

A young friend of mine, Fred Erdman, has devoted much study to the effects of manipulation; his observations are exact and growing numerous.

He tells me he has reduced pressures from an excessive tension as much as 50 mm. Hg; more commonly, 30 or 20 mm. Hg.

My own observations are analogous, though less numerous.

Low tension below the norm can also be somewhat raised; the effects, however, are not so lasting.

My own experience leads me to assume that here we have an agency for the regulation of vascular tension which will prove safe and efficient.

As a means of distributing blood, and hence restoring deranged function,

these nerve-pressures afford a large field of usefulness.

Thus, in long-standing derangements of the digestive tract I have often been able to get permanent betterments; not only where surgical measures had been decided upon, but after operation had furnished no relief, function was restored by their use.

Surface structures in chronic states frequently need support, mild compression, agencies which call and keep the blood to a locality.

This relieves sensory disturbances, even when deep-seated, invites phagocytes, and in other well-known ways encourages dormant activities.

Bier's methods are valuable, but at best they are rather emphatic and their effects more or less transient.

Oftentimes it is desirable, indeed much better, to maintain this passive hyperemia gently, continuously, and uniformly.

The application of thin rubber tissue, as employed by Morris Longstreth, here serves a most satisfactory purpose.

A part can be steadily influenced by wrapping the surface in rubber tissue. For example, the whole abdomen can be influenced uniformly and continuously.

Thus are obtained the better effects of the now "taboo" poultice, which is

indeed always — in proper cases — an excellent, reliable agency.

A whole limb can be wrapped in tissue, inducing various desirable results, sometimes demonstrative of marvellous efficacy.

By means of a simple, yet especially good belt (also the device of Morris Longstreth) similar lasting and compelling effects are produced.

This belt is the best device in my knowledge, and I have tried all the more promising ones. It is 13 cm wide, and is applied where alone it is safe, viz., about the massive structures of the hip bones, never compressing the structures of the lumbar region, where compression would be distinctly hurtful. It is worn loose and low, seizing the relatively rigid and non-sensitive muscle-masses of the pelvic girdle. See article by author, "Rational Treatment of Splanchnoptosis", Medical Record, 17 October 1908.

It is the only means I have found to lift satisfactorily the soft structures of the abdominal area, to free the hydrostatic mechanisms from compression, and hence from passive conditions, and to aid in the ebb and flow of fluids in waterlogged structures.

Conclusions

1. In chronic disease the organism as a whole becomes exhausted through protracted, complex derangement; hence, reparative agencies are at a disadvantage as compared with the normal poise and efficiency of the organism when acute disease or injury arises.

2. Therefore, the pathology of chronic disease is something much more than that of acute states, involving many problems of morbid physiology and psychic disorder yet unsolved.

3. Remedial measures must be directed to the restitution of functional poise and should include all those rational measures capable of conserving and enhancing the autoprotective and autoregulative forces.

4. The basis of relief and cure is to be found along the line of palingenesis (development according to the primitive or original method); also of the overcoming of agencies which retard physiologic processes,—rehabilitation of all functional derangements, regulation of all contributory factors in vital action, so that full compensation shall be achieved of existing damagements.

5. The utmost drugs and medicines can do is to contribute to these desirable effects, however nearly they may approach to the role of "specifics", for overcoming disease entities, unlocking the doors for toxic wastes, and freeing the organism as a whole from disabilities present.

6. The measures on which, in the final count, we can chiefly depend are included under the term personal hygiene:

a. Conservative Persona Hygiene
b. Constructive Personal Hygiene, and especially
c. Reconstructive Personal Hygiene

7. The possibilities of reconstructive personal hygiene lie in the direction of making available latent, undeveloped energies in any adult below the norm, from whatsoever cause; in systematically utilizing the inherent dynamics, and in raising the coefficient of efficiency.

8. The practical purpose of this paper is to call attention to the fact that much can be achieved by bringing into line the functional power of the organs and tissues so as to secure the completest transformation of kinetic into dynamic energy no matter what the morbid agency.

9. Special vigilance is urged upon clinicians in restoring tissue elasticity, mobility, normality in the hydrostatic mechanisms; in amplifying the functional powers of respiration, circulation, urination, the skin, etc., and in affording support for relaxed structures." - Dr John Madison Taylor, AB, MD, Philadelphia, Read at the 12 annual meeting of the American Therapeutic Society, Boston, Massachusetts, 11 to 13 May 1911.

Reconstructive Personal Hygiene

The Curative Force of Expert Regulation of Conduct

"I expect to present in turn certain allied subjects and show their direct relationship to clinical medicine.

Among these are:

Mechanotherapy: a large subject, including as it should any and all mechanical agencies capable of exerting therapeutic effects.

Orthotherapy: correct posture as a basis for conservation and repair.

Elasticity of Tissues: a factor in physical betterment; mobility of gross structures in its bearing on organic adjustments and readjustments, the maintenance of functional integrity in the tubular and hydrostatic mechanisms, etc.

Tension and Hypertension: as a factor in normal and abnormal functionation in:

a) The Psychic
b) The Physical domain

The purpose of this and subsequent communications is to present evidence to show that clinicians possess in the judicious regulation of daily life and conduct a power of conservation and restoration of health which is too much neglected.

In consequence of this neglect of valuable therapeutic resources, many irregular and unqualified exponents of mental and physical health are acting as advisers to thousands of intelligent citizens.

More or less satisfactory work some of them do, but, being unqualified in fundamentals, having no systematic knowledge of the human organism in and out of health, they too often do vast harm through ignorance or pernicious zeal.

The postulate is assumed that the subject of the conservation of health, and the reconstruction of those out of health, deserves the same minute, exact attention, the same scientific research and application, as other branches of clinical medicine.

The experience of the author warrants confidence in the efficacy of systematic regulation of conduct, especially in certain particulars hereinafter to be demonstrated, as a therapeutic measure whereby desired results may be obtained even after all other measures have failed.

Oftentimes the conditions relieved, or clinically cured, were pronounced unrelievable or incurable by competent specialists. Hence it is the author's desire to bring the subject to the attention of the profession, and gain their co-operation, so that similar, or better, finalities shall be accomplished by them.

I

Personal Hygiene: Personal hygiene includes the employment of various agencies concerned in conserving human efficiency by revising the conduct of life in the individual.

At the top stands anthropology, the science of man or mankind; the study of man's agreement with and divergence from other animals; of his physical structure, racial peculiarities, and intellectual nature; of the various tribes and races of men with reference to their origin, varieties, intermixture, customs, etc.; of the general physical and mental makeup and evolution of the human race.

Anthropology puts under contribution all sciences which have man for their objective.

A department of anthropology is euthenics, the science of raising the index of efficiency by improving conditions of environment. This, again, includes betterment of the race, the family, through suitable selections, matings (eugenics), and the habits of the individual (personal hygiene).

By personal hygiene we understand, determine, and apply improved rules of life and conduct—subjecting them to constant revision—whereby latent energies,

inherent capabilities for growth, development, and repair, may be conserved, and human dynamics so enhanced and amplified as to fit the individual to become the best his or her personal endowment renders possible.

For convenience in teaching, we may subdivide the subject of personal hygiene into three component departments which overlap each other, but which deserve to be mentally visualized for practical consideration as separate lines of conservation:

1. Conservative Personal Hygiene
2. Constructive Personal Hygiene
3. Reconstructive Personal hygiene

II

The power of environment to modify human fitness for better or for worse is enormous and as yet undetermined.

The practice of medicine was commonly divided into two departments:

a) Prevention and
b) Cure. To these has been added a third, that of
c) Conservation.

In pursuing methods for conservation there is also accomplished much of both prevention and cure. So forceful may the practice of conservation become as to prove the most important both to patient and to physician.

Industries develop in proportion as rewards are offered. In the division of labour in medicine the only immediate reward for prevention comes through salaried positions such as those of organizations, boards of health, professorships of sanitary science, and the like.

The chief rewards for the clinician come from the care and treatment of instances of disability and disease.

The subject of conservation and sanitation have never occupied the attention which their scope and possibilities deserve, because there is so little remuneration from teaching or enforcing measures in these lines.

The public is, however, beginning to realize the vast possibilities in learning and practising conservation; hence there is a growing demand for knowledge.

Where there is demand there is always supply.

The supply is being freely afforded by all sorts of persons who see where they can earn money by teaching how to improve living conditions.

While some of these have good ideas, most of the ideas are founded on error; or rather, these persons give what the public wants, good or bad.

The only solid ground for final success in human conservation is an adequate knowledge of the fundamental principles of medicine, from biology up to the last

refinements of therapeutics.

In the subdivision of specialism, therefore, there is need of experts on conservation, in personal hygiene.

Here there is a field of research of increasing usefulness and reward.

Dogmatism is nowhere so out of place as in the teaching of personal hygiene.

It is characteristic of science perpetually to revise, amend, and reject ideas and methods. Views and teachings on personal hygiene have varied and still vary because of diversities in individual taste, belief or ignorance.

When the subject is taught in medical schools the teacher too often permits himself the largest liberty of rambling; he seldom takes the trouble to review critically the mass of valuable findings scattered plentifully through literature and talks like the pulpit orator, assuming the divine right to teach simply because he occupies the rostrum.

The outline presented here is inadequate, but we claim that this subject should be accorded the same attention given to other branches of scientific medicine.

It has points of contact with most of these. Some data and conclusions are cheerfully appropriated, others made to serve as component or contributory parts.

Our object is to bring these correlative factors into harmonious interrelationships.

III

1. Conservative Personal Hygiene

This department of human betterment through regulation of conduct, large and varied as it is, may be here disposed of in a few words, that we may pass on to those inviting fuller consideration.

Under conservative personal hygiene we may include those common- sense measures, fairly well known and of recognized efficiency, which contribute to the maintenance of fitness in normal human beings, by improving environment, conduct, and life, in the physical, mental, and moral domains, thus encouraging the evolution of all inherent energies. Environment influences the tangible body and also the psychism.

Everyone requires a constant revision in agencies for betterment, from cradle to grave,—to exercise a ceaseless vigilance and industry. Everywhere, and for all, there are difficulties to be overcome. No full development can be achieved except by struggle, competition, and unremitting endeavour.

Victories or highest rewards not only gratify, but lead to increased powers, wider vision, mental and moral elevation; to the approbation of one's own conscience; indeed, to any height of endeavour, of character, to final oneness with the divine personality.

Memories are called forth, association processes stimulated, by chemical and physical agencies.

Among the forces of environment producing reactions upon the consciousness,

encouraging initiative, determination, selection, are chemical and physical forces such as light, darkness, heat, cold, work, rest, dryness, moisture, food, hunger, attention, sleep, etc., and always the mysterious and compelling force of electricity.

The main objects of life are to secure, appropriate, and eliminate adequate amounts of oxygen, nitrogen, carbon, phosphorus, and sulphur to meet the requirements of metabolism, and to convert these into, and maintain, healthy tissues.

Along with opportunity, there must also be intelligent guidance from within or without.

Through experiences are formed habits of selection and rejection.

The individual cannot be wholly receptive or passive, although to pursue conservative measures no large amount of effort is required.

While it is desirable to accept with philosophy whatever state of life to which it may have pleased God to call one, the exigencies of every day, call for some modification of existing conditions, making for improved ones, in temperature, ventilation, clothing, food, effort, attention, and the like. To secure what is plainly desirable one must guard against deleterious agencies.

Among these are hurtful degrees of light, heat, fatigue, and the like.

The subject involves the whole range of sanitation. Always the elements of fatigue must be reckoned with, a peculiarly hurtful agency in the young.

Fatigue, leading to exhaustion, is capable not only of impairing function and retarding growth, but also of damaging structure, devitalizing organs, opening the door to any or all sorts and kinds of morbific agents, infective or metabolic.

Excessive and continued fatigue is capable of defeating the best agencies for conservation.

2. Constructive Personal Hygiene

The factors in Constructive Personal Hygiene are:

I. An individual who is not impaired by disease, but is not up to the norm, whose deficiencies or defects are capable of demonstration or reliable inference,

II. The selection and application of constructive measures, modifications of environment, capable of amplifying latent powers and leading toward the degree of development of which the individual is capable, in accordance with inherent powers and limitations.

Here we have at command all the powers grouped under conservative personal hygiene and many more. The task is to determine the nature of the concrete problem, its possibilities and its needs, and to make wise, active, and expert use of our resources consistently and persistently.

3. Reconstructive Personal Hygiene

The factors with which we reckon are:

1. An individual of any age or condition in life whose constitutional vigour or health has been so depressed by disorder or disease in the physical or mental domain as to place him or her below the plane of customary efficiency.

2. The eliciting of all those forces for repair of existing causes or phenomena of disability which can be brought into action, and also the raising of the index of efficiency by bringing into the field of action hitherto unrecognized capabilities, rendering them available, till a higher plane of efficiency is reached than the individual has ever enjoyed before.

This can be done in more instances than is ordinarily regarded possible, and to a degree often times far beyond expectation.

Among the reasons why this is not done as often as it can and should be are these:

The individual, or those who exert (or should exert) authority over him, too often will not co-operate frankly, faithfully, and consistently with the adviser.

Again, medical advisers are too often content to act merely as repairers of recognizable disabilities and to lose 8 of their higher duty as conservators of latent powers of both health and efficiency.

Nowhere in the domain of medical art does there lie larger opportunity for gratifying results than in this realm of reconstructive personal hygiene.

IV

The world's most important conservation problem today is the development and direction of human intelligence.

Life, movement, being, depend upon the fullest capacity in the sentient mind, the cerebral mechanism, whereby our superiority over the lower animals is demonstrated. The ultimate destiny of our civilization will depend upon the degree of efficiency of thought-power in future generations.

Greater mental efficiency is demanded not only in all modem industrial pursuits, but also in defensive and aggressive activities.

Steps in advancing civilization are marked by increasing strains, burdens, insults, thrown upon the structures of the body, especially the most delicate of all, the brain and nerves.

Each new crisis in civilization calls for the exercise of higher intelligence, increased cerebral capacity, better judgment, in "the man behind the gun."

Primary education, now in an unsatisfactory stage, is the domain in which best advancements shall be initiated.

How to train the young child to evolve the best that is in him, at the earliest possible time and in such a way as to insure uniform, consistent progress, is the problem for today and all days. To this end much of the best modern thought is being devoted.

Whatever else is taught, or not taught, biology should be included.

No one can guide him or her self aright who does not learn to think in factors of life, growth, reproduction, and development.

Body and mind are essentially one as receptors and transformers of environmental influences.

The ideal aim of health conservators is to reinforce inherent energies, to perfect latent or impaired powers. It is but a limited conception of professional duty to merely repair damages or injuries, to overcome effects of

disorders, or even to cure actual disease. In the field of restoration large individual abilities are exhibited by the exponents of restricted medical specialisms. Best effects are, even there, due to the wisdom shown in dealing with the broader factors involved in supplying constitutional needs.

The solution of most of these problems often lies in estimating the exact status of the grosser mechanisms and in correcting many contributory disabilities not ordinarily recognized as significant.

Every person, young or old, is capable of a notable increase in vital dynamics by revising modes of life. This is particularly demonstrable as middle age approaches and tissue elasticity subsides.

From earliest years the child begins to retrogress, to lose pliability, adaptability; to fall into one or another form or kind of disability. Some of these deviations merge into serious retrograde changes, often shown by rigidities, densities, caused by faulty habits or vitiated automatisms, due to omissions of suitable variety in both impulses and movements, whereby alone symmetrical action and reaction are assured.

The factors involved are both psychic and physical. The deadening effects of routine, of monotony, are well known.

Stimuli should be varied; suggestion or autosuggestion is rarely adequate to preserve vital rhythm.

Individual resourcefulness is seldom great, or only exhibited in restricted and specialized lines.

Hence it is of value to invite skilled direction from one who has achieved a well-rounded familiarity with human perfectibility, needs, and derangements, and can judiciously particularize.

V

Human health, constituting as it does the basis of economics, is steadily coming to be recognized at its true commercial value. Breadwinners especially are awakening to this fact, and beginning to appreciate expert professional aid in perfecting and maintaining bodily efficiency.

That physician is most wise and useful who omits no opportunity to estimate the fundamental factors in any problem presenting. Not only should he meet immediate exigencies, deal correctly with confronting difficulties, but he should search out and correct underlying and contributory causes, which may keep the individual on an inferior plane of potentiality.

He should do much more, make occasions and seek earliest possible opportunities to learn all relevant facts bearing upon the vital status of those in his charge. To accomplish this the home group requires constant and varied hygienic education.

The tendency is for each good citizen to make the best of his condition, to treat lightly unobtrusive ailments, to forge energetically ahead, ignoring slight symptoms, especially psychic phenomena, so that, too often, serious states are revealed only when far advanced or too late. This disregard of ailments is commendable; it makes for courage, endurance, renown; for character-building, success. Through such pertinacity only are the highest ends achieved. Carried to its logical limit, however, it lures the ignorant optimist to a state of perilous monism.

Conversely, to err by overmuch self- searching leads to hypochondriasis, timidity, inefficiency.

Most physicians are aware of this, but there are different degrees of awareness.

Some impressions, even some convictions, are cloudy, inexact, or worse, fail to act as stimuli to right action.

A nicety of judgment is needed in solving such problems.

For instance, it will prove a boon to a man complaining of a slight dyspepsia for the physician consulted to discover and rehabilitate an organism never brought to that degree of vigour and stability which, if attained, would have enabled him to attain greater power in life.

Hitherto he may have been held by removable limitations to some petty hireling post.

He may be handicapped by physical defects, be wasteful in method, underdeveloped, lacking in some essential particular, or all these may combine to keep him low in the economic scale.

Unwarned, confident, he often assumes increasing burdens and presses on to, or beyond, the limit of his working powers. Then there ensues some minor or major accident, or disease, and a useful life is warped, mind and body are distorted, perhaps thereby also complicating important collateral domestic or financial interests.

All this peril or dwarfing could have been avoided by adopting one of 2 courses of action:

1. Had the family physician been observant, wise, and, above all, dominant, corrective measures could have been instituted sufficiently early.
2. Had the individual himself been duly alive to his economic needs, advice

would have been sought capable of establishing full working efficiency. It is equally important to avoid or overcome the oft-recurring tendency to apathy, nil admirari, laissez faire, "letting well enough alone," sinking into passive despair.

VI

Parents are not blind to the value of first-class working efficiency, however insensible individuals may be to their own ultimate advantage.

For the relief of actual disease or damage, even more so for fancied ailments, they are often willing to consult a physician.

When they arrive at the conviction of a need for general or special betterment, they are usually prepared and willing to spend time and money on measures confidently endorsed.

If, however, they would realize that the best and most complete plan is to consult a physician promptly and frankly or to seek advice periodically as to how health may be retained, powers improved, and a relative perfection achieved, by far the greatest gains in efficiency would follow.

Remedial measures are efficacious in proportion to:

1. The judgment and care exercised by the adviser in searching out causes, and
2. The degree of co-operation supplied by the individual.

Success depends upon a thorough estimation of the specific needs of each person.

Experience in endeavouring to solve the complex problems of indefinitely lowered health, to get that uplift so desirable whereby we may make effective efforts previously unsuccessful, has impressed me with the importance of securing greater elasticity of the tissues and promptitude in the reaction-times between controlling centres and outlying motor parts.

This constitutes a key to vascular competence by enhancing vasomotor reflexes throughout the whole system.

The grosser mechanisms often need even more attention than is afforded by customary methods of organic regulation, because without first achieving elasticity therapeutic results are not so readily secured.

Full organic competence is not sustainable unless the supporting structures are maintained. Digitized by in normal degrees of mobility.

The lungs, heart, blood-vessels, for instance, cannot do their perfect work in a contractured thorax.

The abdominal viscera are unable to perform their full duties unless their supporting structures are adequately strong and elastic to exercise normal counterpressure.

The hollow viscera both above and below the diaphragm need to be held poised in their normal interrelationships, so that vital hydraulics, connecting tubes large

and small, may suffer no interference from undue compressions.

Poisons, endogenous and exogenous, work greater harm unless local stasis is relieved.

No amount of other salutary agencies can accomplish much if the normal stimuli to circulation lack something of necessary impulses and responses.

The most powerful drugs can do little for ultimate restoration of capacity if the great oxygenating laboratories, the muscles, cease to play their essential co-operative part.

The benefits which we know to follow physical activities are explainable upon this same principle of responsiveness to reflex motor stimulation through vasomotor subcenters.

For those who are unwilling, unable, or organically unfit to avail themselves of open-air sports and muscular activities, as much or even more can be accomplished by brief, but exact education in the cycle of normal motor impulses and responses, along with correction of local rigidities in the skeletal structures, direct or collateral.

There is needed a precise estimation of what is amiss in the particular person, by whatever means the individual taste, opportunities, or organic competence makes practicable, and a correction, in so far as is feasible, of the observed shortcomings.

By securing greater elasticity of the less-used structures we can accomplish improvements in many unexpected directions, among the chief of which is securing harmonious interreactions through systematic motor stimulations.

The body is dependent upon wholesome motor stimulations for the maintenance of diverse nutritive processes.

VII

Normality of posture is essential to organic competence.

Erectness is compounded of vertical and horizontal lines from which divers other lines depend. While curving lines make for grace, they tend to impair the power of support. The weaker the person, the greater are the curves exhibited.

Much bodily weakness is conditional upon that exaggeration of dependent lines which evidences incompetence in the supporting structures.

These supporting structures may be at fault at both origin and periphery.

For example, the visceroptoses arise in central defects which usually can and should be radically corrected by enhancing the vital index through attention to the inherent fountains of force.

A secondary cause is loss of integrity in those agencies exercising support which is supplied by collateral and external structures. Where these are voluntary muscles their vigour must be enhanced by all means, among the most definite of which is suitable use by exercise. The key to erectness, hence to skeletal efficiency, hence to visceral interrelationships, hence to an important factor in organic competence, lies in the maintenance of a normal posture of the thorax.

This assumes the maintenance of a relatively straight backbone and horizontal position of the ribs. When the ribs remain relatively horizontal and are easily held well up to their normal levels, there is afforded adequate support to the diaphragm, the external and internal abdominal muscles, and to all those structures combining to afford visceral support.

There results therefrom a surprising degree of improvement in organic competence. To secure this thoracic normality requires intelligent motor education.

Some backbones are too straight; if so, they are abnormal; often the vertebrae are fused together, rigid, unwieldy. The ribs in such subjects are usually flattened, collapsed.

The training of the body of the child in accurate, purposeful movements should be applied to all, not merely to a selected group. Specialization by picked athletes is altogether wrong, because those who need most thus get the least. Inferior physiques require most training.

Each individual should be educated not so much in the line of his proficiency as in that of his deficiency.

The object of training is not overspecialization of the best endowed, but a well-rounded development for each and every one; not the overtraining of a few, but training of a race of men who shall achieve abounding endurance, energy, powers of resistance, and initiative.

VIII

Ventilation

Under this heading we have to consider the value of air in motion, of cold as a stimulant to tissue respiration.

Facts are said to be stern realities. From facts we can learn principles of action; from enough of them can be deduced scientific laws. In estimating facts it is essential that they be judged in their entirety, with full consideration of contributory evidence and relationship to other, collateral facts; otherwise we may continue to blunder and reach only partial or erroneous conclusions.

It is natural to appreciate and extol creature comforts, warmth and shelter after cold and exposure; sunshine after clouds and rain; a full stomach after starvation; rest after struggle; uniform cosy conditions of life after raw buffetings.

Nonetheless, it is a fact, abundantly verified by universal experience, that peoples and races evolved in cold, cloudy, windy countries, such as those of us whose ancestors came from northern Europe, require as an essential condition of health and sustained vigour, and hence of happiness and efficiency, to be subjected to the very reverse of the above Sybaritic conditions of ease.

First of cold: While it is true that exposure to intense and prolonged cold can and does produce hurtful, even fatal, effects, yet cold is, in moderate degrees, of the utmost value in stimulating our organisms, and in restoring our tissues to the

norm when deadly disease agencies take hold upon us.

This applies, e.g., in pneumonia, in many forms of infectious fevers, and especially in tuberculosis.

Cold raises the vascular tension in enfeebled children, increases appetite and nutrition, assists the conservative action of fever, and contributes to restoration of the vital balance. It is known that cold is one of the most powerful aids in development, one of the most efficient agencies for the cure of disease and relief of depression.

Heat, on the contrary, especially prolonged heat above 27°C, is one of the most powerful depressants, and may turn the scale toward or itself induce fatalities.

Air in abundance, in motion, especially in the open, or directly from the open, is an essential to the maintenance of health and a powerful aid in restoring health where it has been impaired.

We have only been recently, and are not yet wholly, emancipated from the erroneous idea that night air is "charged with deadly miasmas".

Winds may be disagreeable, even terrifying; yet, they are most salutary.

IX

So, one after another, are our fears of unknown agencies of evil cleared away by facts, learned from observation, reflection, and deduction; in brief, by science.

It has been shown that tuberculization is not caused by the tubercle bacillus alone, but that there must be added the further factors of faulty hygiene and an artificial atmosphere of living.

At least 30%, of all school children are said (Phillip: Brit. Med. Jour., 20 April 1912) to exhibit demonstrable evidence of tuberculization.

It is further stated that, by the 15th year, 75%, of all children are thus affected.

Some seeds of infection will perish; some will grow and lead to destruction.

The evil flame must be stamped out in each.

The problem is by no means easy, but the main principles are now clear.

Natural immunity increases as the individual grows older, or at least to the time of maturity. Tuberculosis is a disease of early life; that is, has its beginnings, it can and should be cured, then.

Conditions for growth and development must aim to strengthen immunity, to reach perfection of maturity.

During the last decennial period there was a decrease of 18.7%, from tuberculosis in the registration areas. (Boston Med. and Surg. Jour., 4 July 1912)

Most of this result is from reconstructive personal hygiene.

We are still in the thraldom of doubt over the question whether drafts of air induce colds.

Architects exercise the nicest precautions, when installing systems of heating and ventilation, whereby we may heat our houses to summer temperature and supposedly keep out the demons of influenza, pneumonia, bronchitis, etc.

The majority of mankind today firmly believe it is necessary to their welfare

that they live, during cold weather, in a uniform temperature of 19° to 21°C; to have just enough air coming in "to get rid of the foul, used-up, vitiated air, full of CO2 and animal emanations, effluvia," etc., by elaborate "systems of ventilation."

As a matter of verified fact, confined air, surcharged with human exhalations, does offend the nostrils and induce distress, even faintness and real harm.

It can be rendered endurable, however, by being kept in motion, especially by being cooled. In short, catching cold is a process of infection superinduced by lowering of the autoprotective powers on account of remaining quiet a long time in superheated air while over clothed and overfed.

It is an interesting, rather startling fact that half-starved, half-clothed people, overexposed to cold, as on a raft at sea for hours or days, do not catch cold.

Nor does the pioneer in the Arctic outlands. Nor does the sailorman in the old-fashioned "fo'castle," though the modem sailorman, living in steam-heated floating palaces, does "catch cold" and develops tuberculosis to such an extent as to create alarm lest he become extinct.

X

Excessive light, especially sunlight, is only second to protracted exposure to heat as a destroyer of energy. A climate that is all sunshine and dryness— and windless—not only impairs somatic powers, but dethrones reason (Chas. A. Woodruff).

During the hot, protracted, semitropical summers in the United States it is to the highest degree imperative to protect infants and young children from the midday sun and for several hours; nor is it well for them to remain very long in the sun, even on cool days, during the summer.

Sunglare is destructive to vital resistance; the extraspectral rays exert a baneful influence nearly equivalent to the heat.

"Biotic energy arises from the transformation of those other forms of energy, heat, light, sound, etc., which react upon the transformer, the living substance" - B. Moore, quoted by Leonard Hill

"A sense organ is not stimulated unless there is change of rate in the transference of energy. If a weak agent is to stimulate, its application must be abrupt" - Sherrington, ibid

"It is not the wind God tempers to the shorn lamb, but the skin of the lamb to the wind. Monotony of sedentary occupations and of an overwarm, still atmosphere endured for long hours depresses vigour, induces the atrophy of disease" - Leonard Hill

Alternations of struggle and rest, of cold and heat, of hunger and repletion, evolve vigour, stamina, efficiency. A child long confined in the schoolroom is in a constant state of nervous tension.

He considers alternative lines of purpose, of action, is excited, but passive, held to inaction; the natural outlet of energy, muscular responses, are not permitted to follow and relieve the overstrain on body, mind, and disposition.

Such a child may be relieved by permitting free action once in so often or mind and body will both suffer seriously. Yet the city child who is well fed and irresponsible, who runs the streets freely, can and does grow to a size and strength comparable to those of a country child.

Muscular exercise affords varied and valuable fields of usefulness:

It relieves the heart by emptying the veins; it replaces fat by muscle and thereby prevents the stagnation of blood and lymph in tissue which does not spontaneously expel it; it increases oxygenation of cells and tissues, and it enhances digestion and metabolism.

In the brain-worker at his desk the heart is accelerated by his work; his blood-pressure is raised; but he has neither muscular activity, change of position, nor respiratory activation to help pump the fluids around; constriction of the arteries (produced by excessive toxic wastes) in the lower limbs thus invites degenerative vascular changes.

Only by free activities in the open air can we hope to maintain natural resistance (immunity).

Any educational method which interferes with spontaneous movements does more harm than good. Strained attention, continued, not only fatigues, but exhausts; it produces lasting and serious damage on growth and development in both mind and body." - Dr J. Madison Taylor, AB, MD, Associate Professor of Non-pharmaceutic Therapeutics in the Medical Department of Temple University, Philadelphia, Pa., in "Monthly Cyclopedia and Medical Bulletin", 1913.

Dr John Madison Taylor, AM, MD

4 July 1855 - 3 October 1931

"Dr Taylor joined this Association 36 years ago and made many contributions to the annual programs.

He had a particularly attractive personality; he was strikingly handsome and genuine in his attachment to his friends.

He was a Princeton graduate of 1876, and of the Medical Department of the University of Pennsylvania in 1878.

After serving as resident physician he became assistant physician to the Children's Hospital and later professor of diseases of children in the Philadelphia Polyclinic.

The most important influence on his professional career was his service in the

clinic of Dr S. Weir Mitchell at the Infirmary for Nervous Diseases and the attachment Dr Mitchell had for him.

Dr Taylor and I assisted Dr Mitchell in a great deal of his private and hospital practice and it was in this connection that I came to know him intimately.

Taylor had a remarkable eye for form and colour and he furnished many illustrations in colour for the scientific papers of Dr Mitchell, especially in his later studies and experiments on snake venom, which were published by the Smithsonian Institution.

He did this also for Keen in papers on brain surgery.

Through Dr Mitchell, MD he came in contact with many distinguished people whose recovery of health was no doubt hastened by the enthusiastic cooperation of the young assistant whose sympathy and tact inevitably won him friends.

His brother is Dr William J. Taylor, MD a well-known surgeon of Philadelphia.

Dr Taylor was a charter member of the University Club, Philadelphia; he was also a Fellow of the College of Physicians of Philadelphia for 45 years; the Philadelphia Country Club; the Fencing and Sparring Club and many other organizations.

He was a voluminous and interesting writer and won a high place in our profession." - Dr Guy Hinsdale, MD in "Trans American Clinical and Climatological Association", 1932.

Chapter 23

The Effect of Medical Trade Toxic Drugs on the Emunctories

"In my entire practice, ***I have never given a dose of medicine. I have use in the treatment of my patients the following: Air, Food, Water, Sunlight, Dress, Exercise, Sleep, Rest, Social Influences, and Mental and Moral Forces."*** *- Dr. James Jackson, MD in "How to Treat the Sick without Medicine", 1868.*

Medical Trade Drugs when taken create stress in the body systems, and by consequence the Emunctories are called to deal with all toxicity or poisons.

Synthetic Medical Trade Drugs; are both toxic and poisonous to the body systems and as such need to be removed, due to its toxicity the Emunctories double their functioning in order to remove as quick as possible such toxicity from the body.

In the light of what has just been given, explained one can understand the workings of many of this so-called "Medications" issued by the Poisonous Medical Trade Sect.

There is no therapeutic value to this de-facto Poisonous Drugs, other than being poisons make the body Emunctories work faster to remove the both the toxicity of the Drugs itself and along with it all other cellular and non cellular toxic waste from the body.

Modus Operandi of Medicines

"It is an observation, in which perhaps all practical physicians will accord, that the various formulae almost every one vaunts as his "sheet-anchors", are beneficial in proportion as they promptly and powerfully act upon the great excretories of the system.

What is, after all, the long-inscrutible modus operandi of medicines, in virtue of which healthy action is re-established?

The phenomena of CRISES - Nature's own mode of cure - and many other facts in Pathology-throw light upon the subject.

It may be affirmed, without fear of contradiction, that **medicines have no absolute or specific curative power, any further than as they provoke an extra activity of one or more of the grand Emunctories or drains: safety-valves of the system.**

The outlets or excretories in question are: perspiration, diuresis, purging, vomiting, pulmonary exhalation, and cutaneous eruptions.

We lay it down as a principle - an incontrovertible theory - as to the modus operandi of really curative medicinal agents; namely, that they operate physiologically, not chemically: i.e., that it is not by chemical combinations with the products or elements of disease (and so neutralising them), but by provoking physiological actions, that they cure.

What is the marvel that simple water, variously applied, should produce curative results supposed to belong only to the best directed pharmaceutic resources?

A very slight acquaintance with the curative effects of drugs, and with the operations of water, will suffice to show that medicines have no physiological agency that water has not: that, in fact, when medicines do cure disease, it is only when they determine those constitutional actions which water produces more safely, more simply, more certainly, and more efficaciously.

It is a very remarkable fact, in favour of this view of the subject, brought out by the late researches in Vital Chemistry, namely, that the elements of the blood and of muscle or flesh, with the addition of oxygen and water, are identical with those of the excretions: urea, bile, carbonic acid, and ammonia , being the product of the decomposed tissues, the wasted materials of the frame passed out, in new combinations, through its great eliminators, the kidneys, liver, lungs, and skin.

To eliminate these decomposed materials - to furnish elements to form these new secretions: water and oxygen are necessary.

The more highly azotized portions are expelled in the form of urea and uric acid; the oxygen uniting with the carbon keeps up the temperature.

The carbonic acid formed by the slow combustion of the carbon of the muscles is exhaled from the skin and lungs.

Morbid products may accumulate in the system in various ways, notably in 3 ways.

1. From deficient vital power in the organism, or from its waste in muscular exertions, the fret of thought or the passions, &c., beyond what the supply of food repairs; there is an increased transformation of tissues greater than can be oxydised or eliminated.

2. From high feeding, excessive luxury, sleep, indolence, constipation, or obstructed excretions, the food is ill-assimilated, or morbid products are elaborated: the same result happens; an accumulation of materials, of metamorphosed tissues, more than can be oxydised and carried out of the system.

3. The retention in the body of a morbid poison, introduced from deleterious agents without, and acting as a leaven: corrupting the whole.

In any of these cases, the usual elements of waste are not then simply effete and inert, but become an active "materies morbi", either deposited in the interstices of structure, or diffused in the currents of circulation.

What mode, then, so likely or so effectual for its elimination, as a system, whose sole philosophy and aim of treatment is to excite an intense activity of the secreting and excreting functions, by the processes submitted to; the quantity of water drank; the amount of exercise taken; the powerful demand for, and the proper disposal of nourishment, that is speedily set up?

It is, hence, very apparent how rapidly morbid elements and deposits must be absorbed and thrown out; unhealthy tissue substituted by sound structure; and weakness of function and of frame replaced by strength.

To this view of the subject, how strong is the testimony borne by the abundant deposits of foetid or glutinous débris, often left on the sheets and bandages!

It is rational to suppose, that many of the phenomena of disease are the mere efforts of elimination; or the constitutional disturbance of a fermenting process, that from a small diseased point (as in the case of the poison of small-pox, cow-pox, syphilis, or in effluvia or miasmata absorbed by the pulmonary surface) taints the whole system with its poisonous leaven.

On this hypothesis, which many facts countenance - none disprove - it should be the aim of treatment to facilitate excretion, to induce new changes, to separate and throw out morbid elements or effete materials, and to replace them by healthy nutriment.

What are the most trustworthy drugs? Those, precisely, whose action on the excretories is the most certain and decisive.

We challenge the most strenuous advocate of drug-medication to adduce a single instance of a disease being cured by any chemical agency of drugs - any combinations of a remedy with diseased elements.

True, uric acid can be carried out of the system chemically; so can the phosphatic and other deposits: acid in the stomach may be so neutralised.

But this is the treatment of mere symptoms: the mere effects of disease.

Will the remedies in question correct the morbid disposition that causes these effects?

As soon expect purgatives to restore healthy action of the bowels, or diuretics healthy secretion from the kidneys.

To be able to tap a dropsical patient is but a small matter of boast, and a petty triumph of art, if we cannot prevent the accumulation of water

How does antimony cure pneumonia, or bronchitis; or mercury pleurisy or peritonitis?

ls it by their specific action - by any occult qualities-by any indescribable combination with morbid elements, as benzoin combines with uric acid in the system?

Surely not! Or is it by way of derivation-determining a strong, where there was a weak, organic activity: opening up nature's own drains - quelling a revolt, and ejecting the malcontents, by quickening the absorbent and eliminating functions?

Is the vomiting and purging, or the determination to the skin, which are one or all the primary effects of antimony, for nothing in the cure of an inflammation of the lungs.

Broussais, at least, did not think so; and he was no shallow observer.

Whether these speculations point to truth or error, we believe it is the case with all right minded practitioners, that, in proportion as they gain experience, they put less confidence in vaunted specifics, and become more disposed to imitate, in their curative effects, the salutary processes of Nature." - Dr John Balbirnie, MD in "The Grounds of Non-Confidence in Drug Medication", Hydropathic aphorisms the simple treatment of disease contrasted with medicinal abuses, or, The why and wherefore of the water cure, 1859.

Vegetable Materials are more Congenial to the Human System than Minerals

"The stomach, as we have seen, displays, for the digestion of aliments, an action proportionate to the difficulty of their assimilation; but for this purpose, there must exist a certain affinity between them and it; otherwise, that is, in the cases in which they are indigestible, it is solely tormented in efforts for their expulsion.

In the first case it is on its internal membrane that the greater part of the excitation occurs; in the second, this membrane does not act for the process of assimilation, but rather causes muscular movements of expulsion, either through the pylorus or cardia.

We understand, after this reflection, how the abuse of indigestible injesta tends to deteriorate the assimilating action of the mucous membrane, and to give the muscular a convulsive habit.

It is on this account, I asserted, that, mineral medicines in the end, destroy the digestive function, and consequently nutrition.

Many vegetable substances, we have said, have nearly the same effect, when they are of such a nature as constantly to resist assimilation.

The kind of phlegmasia thence resulting becomes in time incurable, and this is the situation in which are those who have used in excess, bitters not nutritative, and Peruvian bark.

Still, however, the alteration thence resulting, seems to be less alarming than that produced by minerals.

The too prolonged use of calomel (cathartic), corrosive sublimate, and purgative salts, is then still more pernicious, and we see, in fact, that those who have been addicted to such thing, become pale, exanimate, and scorbutic, and end their days in a state of marasmus or dropsy.

It is not the digestive surface alone that suffers from their pernicious effects, but the whole animal economy.

The depurating power, always occupied in the expulsion of mineral molecules, is exhausted; the nervous system loses its energy; there is no longer any reaction against the perturbating influence of the air, or of moral affections, and new

congestions are formed at each moment in the viscera and the tissues of the locomotive apparatus; engorgements arise in the lymphatic system, in the principal secretors, such as the liver, &c. and a vicious nutrition of heterogeneous tissues is created, the resolution of which is afterwards impossible.

Hence those dropsies, and the scorbutic states, of which I have spoken." - François-Joseph-Victor Broussais, in "Physiology", chapter Abnormal Assimilation, 1828.

"Some diseases are just a result of irritation. Irritation then caused inflammation, which primarily occurred at the Gastrointestinal Tract in most diseases. Then, this irritation would pass to other organs "sympathetically"." - *Broussais*

Pernicious Effects of Blood Letting

"Among the innumerable abuses practised in the healing art in the present day, that of blood-letting claims a prominent station.

It is now resorted to by modern physicians in almost every disease and modification of disease to which the human family is incident. We see it practised from the high est to the lowest grade of inflammatory fever, and even in the cold stage of intermittent.

So popular is the belief of the sanative powers of bleeding that, no sooner than a person feels a deviation from the standard of health, he must lose some blood; if he has a trivial pain in the head or side, the doctor must be sent for to open a vein.

Public opinion ought not to screen my practice from investigation; and especially that which concerns us so much as this, merits at least a few moments consideration.

The blood is truly termed the vital fluid, for by it the animal economy is supported, vivified, and nourished; from it we receive our warmth, strength, and activity, and in proportion as the animal is deprived of its blood, so in the same proportion is it deprived of life, vigour, and strength.

It has been proved by able experimenters, that when the quantity of blood taken from an animal has the same relation in weight to the body of that animal, as one has to 16, the result is death.

The blood is distributed by the heart and arteries through every part of the body, even to the firmest part of the bones; and whenever the quantity sent to any particular parts diminished for any length of time, that part languishes and becomes emaciated, and when the circulation ceases, the member perishes.

The more the body is called into action, the more the blood is required for its support.

The construction of the animal economy is such, that when by exertion the parts require a greater quantity of blood to sustain them, the contraction of the muscles causes the blood to be propelled with much greater velocity; hence the reason of the increase of the arterial action in running, leaping, &c. and why labouring people require more nourishment than the sedentary.

After the blood has arrived near the surface of the body, the impurities are here separated from the pure, and are cast off by what is called insensible perspiration, when imperceptible; and when so copious as to appear in drops on the surface, it is termed sensible perspiration; the particles which are still fit for nourishment are again propelled around the system to perform their destined functions.

As this fluid is spilt in almost every disease, and state of disease, to which man is incident, let us examine the principal symptoms which it is intended to counteract; the leading ones are two; they are congestion and increased arterial action.

1st Congestion: In this case we have too great a quantity of blood thrown to a particular organ; but does this go one step towards proving there is too much blood in the system? - No! it proves only that there is an unequal distribution of it, and not too much.

How do physicians treat this state of the system? It is by bleeding, which gives momentary relief, by lessening the quantity of blood; consequently it cannot press so hard on that organ; but at the same time, this debilitates the patient.

The relief is some what in proportion as the patient is debilitated, and generally lasts nearly as long as the debility; but when the patient regains the natural quantity of blood (if the predisposition is not removed) it again rushes to the diseased organ, then comes another bleeding, and follow debility and exhaustion, and so on in this manner, until at last, death closes the scene.

Here it may be said, the first symptom was congestion, and death is caused by debility from the loss of blood.

A man of the most superficial observation has observed, when an organ is in a congestive state, that the remote parts are cold, and have but a small quantity of blood sent to them.

How are we to treat this unequal distribution of blood on rational principles? nothing more is required than to equalize the circulation whereby the equilibrium is restored, and the system is enabled to perform its functions in harmony, with out the loss of a drop of that fluid which is so essential to life. And to accomplish this, we have nothing to do, but to restore the natural secretions and excretions.

2nd Increased Arterial Action: In fevers, the pulse is accelerated, and the surface of the skin is raised much above it natural temperature.

But this unnatural aspect of things is not owing to the great quantity of blood in the system; but to this, the extreme ends of the arteries, which terminate in the skin are constricted, thereby retaining the perspirable matter within the system, which, when cast off, answers the double purpose of (purifying the blood from

morbific humors, and keeping the body at a medium temperature by its constant evaporation and consequent absorption of heat).

It is evident that when this great regulator of the animal economy is stopped, that we shall have an increase of heat by the loss of evaporation; and the morbific humors being retained within the circulation, they act as foreign irritating substances.

Pure blood is essential to the healthy performance of every function of the different organs of the body; this being now no longer in a healthy condition, but intermixed with a foreign substance which irritates every part to which it is carried, the whole system becomes deranged and irritable, nature struggles to free herself of her harboured enemy, she propels the vital fluid around and around in its wonted course, with an increased velocity, seeking to free herself of her burden, which is at last accomplished by perspiration.

How do modern physicians go to work to assist nature in her struggles?

The simple fact is this, — they do not assist her at all, but in the face of all common sense and reason, they bleed, yes, bleed largely.

In this case it is recommended by the standard authors of the day to bleed largely; they say, small bleedings will not answer in such cases, they only serve to do mischief, but you must draw from a large orifice, and in a small space of time, a sufficient quantity of blood to produce a shock in the system; or in other words to cause fainting.

Mark this well — is this the path which nature points out?

If a person had a tub of muddy water which he wished to purify, would he draw a part off and throw it away to accomplish this purpose? or would he filter it?

The former is the principle on which bleeding is grounded, and on the latter depends the principle of nature's operations.

When you are sick the doctor draws a pound of pure blood, and perhaps only rids you of a grain of the approximate cause of the disease, without removing the disease; whereas nature throws off the offending cause, without the loss of a particle of that fluid whose natural quantity is so essential to the healthy performance of the respective organs by which the body is supported.

I think it must be evident to every person, after a moment's reflection upon the subject, that the loss of a fluid so important to life must be very injurious; yet when you are sick, your vital power prostrated, the doctor will tell you to be bled is essential to your recovery, and without it there is no hope of prolonging your life.

Is this rational doctrine, when you are prostrated on your bed — your vital energy diminished — your whole bodily powers wavering, and their wonted vigour gone; are we then to snatch away that cordial of life to regain health?

No: this is the practice of the day — it is high time for you to look to yourselves — can you swallow such absurdities as these? — will you allow such impositions to be practised upon you, when your life is at stake?

I firmly believe that there is no disease in which there is too much blood in the system; and that there is none to which man is incident, that requires the shedding

of blood. The belief in the beneficial effects of bleeding, cannot be supported by reason or common sense, and is altogether absurd and unnatural.

There is not a solitary fact in the restorative operations of nature, that goes to justify such a practice. To say the least of it, it is an artificial, cruel, and murderous practice." - in "Reformed Medical Journal", 1837.

Removal of the Poison

"The relative who telephones for must be told how to give first aid. This consists in making the patient vomit.

If the patient is conscious-even though drowsiness is developing-vomiting can nearly always be induced by boldly thrusting a finger down the patient's throat. The vomitus should be collected in a clean pail for examination later.

After vomiting has occurred the patient should be made to drink 2 cupfuls of warm water and then digital stimulation of the fauces should be repeated.

This simple procedure carried out 3 or 4 times is invaluable.

No matter what may be the outcome of treatment with emetics the stomach must be washed out.

And even when it seems virtually certain that the poison has passed into the intestine gastric lavage should not be omitted; experience shows that when suicide is attempted by rapidly swallowing a large number of tablets, many of them may become impacted at the lower end of the oesophagus and remain there until they are removed by the physician-or by the pathologist at necropsy." - Dr T. J. Thomson, MD, Dr Stanley Alstead, MD in "Emergencies in General Practice Barbiturate and Aspirin Poisoning", British Medical Journal, 23 April 1955.

Chapter 24

Remove the Cause

"It was Christian Friedrich Samuel Hahnemann, a German Physician teaching that the removal of the cause was the first step in the proper method of cure. This may occasion at times rectification of diet; the removal of irritating substances; change of environment; anything and everything that may place the patient in the best possible relation for complete cure, which will take place of itself when the cause is removed. Hahnemann taught by precept and example the value of thinking through to the beginning, the first cause, of disease conditions, and treating them accordingly." - Dr Herbert Alfred Roberts, in "Principles and Art and Cure", 1936.

In a State of Disease

The Emunctologist through applied therapeutics, must remove the cause of the disturbances to the body, making all that which is necessary to allow that activity, which will make for the replenishing, rebuilding and resuscitation forces in the affected areas of the body, then disease will gradually disappear.

When the cause is removed, both the body's resistance and condition, becomes in a progressive manner, more close to normal.

Treatment of Disease

"But the new school does not feel itself under obligation to give any medicine whatever, while a generation ago not only could few physicians have held their practice unless they did, but few would have thought it safe or scientific.

Of course there are still many cases where the patient or the Patient's friends must be humoured by administering medicine, or alleged medicine, where it is not really needed, and indeed often where the buoyancy of mind, which is the real curative agent, can only be created by making him wait hopefully for the expected action of medicine; and some physicians still cannot unlearn their old training.

But the change is great. **The modern treatment of disease relies very greatly on the so-called natural methods, diet and exercise, bathing and massage, in other words, giving the natural forces the fullest scope by easy and thorough nutrition, increased flow of blood, and removal of obstructions to the excretory systems or the circulation in the tissues.**

Now the patient is bathed and nursed and carefully tended, but rarely given medicine.

This is the result of the remarkable experiments of the Paris and Vienna schools into the action of drugs, which have shaken the stoutest faiths; and partly of the constant and reproachful object lesson of homoeopathy.

No regular physician would ever admit that the homoeopathic "infinitesimals" could do any good as direct curative agents; and yet it was perfectly certain that homoeopaths lost no more of their patients than others. **There was but one conclusion to draw, that most drugs had no effect whatever on the diseases for which they were administered."** - Sir William Osler, MD in "Encyclopedia Americana", Vol. X.

Scarlet Fever And Its Treatment

"Scarlet fever symptoms include a sore throat, fever, headaches, swollen lymph nodes, and a characteristic rash.

The recent prevalence of scarlatina in the metropolis, and in many rural districts, has called attention to the treatment of this disease.

Scarlatina is the effect of a certain morbific poison received into the blood, which has produced an infectious and contagious disease, and the scarlet rash is a means of elimination which nature adopts to rid the system of a noxious agent.

One of the generally received doctrines of physiology teaches, that when a poison has entered the circulation, a specific effect follows, and that a certain distinct process is required for its excretion.

The specific effect of poisons is very evident. Lead always produces muscular paralysis, mercury ptyalism, the poison of measles never fails to produce measles, and the imbibition of the poison of scarlatina is always followed by scarlatina.

That a distinct process is required for the elimination of a poison is equally manifest. We see the selective affinity which the poison of typhoid fever has for the solitary and aggregate glands of Peyer.

The skin, the conjunctival and bronchial mucous membranes, are the chosen emunctories for the poison of measles, the poison of scarlatina is eliminated by the skin, the tonsils, the pharyngeal mucous membrane, and the kidneys.

Much misconception has arisen from the use of a number of terms relating to one disease, such as scarlatina simplex, scarlatina anginosa, scarlatina maligna, and scarlatina latens.

These variations of degree, not of kind, confound the student and impede a clear knowledge of the pathology of an important disease.

All these various effects may, doubtless, be traced to the intensity of the poison, the condition of the patient at the time of infection, and the hygienic means made use of to facilitate the excretion of the materies morbi.

The treatment of scarlatina, therefore, resolves itself into a problem.

Given a patient infected with a certain poison, it is required to promote the elimination of that poison "tuto, cito, et jucunde"; (safely, quickly and joyfully).

Sydenham cautions his reader as to the Nimia Medici Diligentia:

> ***"We are merely required to place the patient in the position best suited to facilitate the elimination of the poison; and, though by the absence of officiousness, we may seem to deserve the sarcasm of Voltaire, "that the doctor stands by and amuses whilst nature cures the patient."***

We must, nevertheless, remember that we are the assistants, not the substitutes of nature. About 80%, of the cases of scarlatina will be found in children.

If the poison has been more in tense, if the patient was delicate and the vis vitae diminished the cutaneous excretion of the poison may not be sufficient.

The tonsils will now be seen enlarged, and the mucous membrane of the fauces injected, and of a bright red colour; patches of lymph will likewise be visible upon the tonsils and palate; if these be removed, depressions are evident, showing ulceration; in fact, there are all the phenomena of inflammation in a mucous membrane.

Another feature of this disease arises where the kidneys are chosen as the emunctories of the scarlatinal poison.

Anasarca, the result, as shown by Dr. Gr. Johnson, of acute desquamative nephritis, usually appears about three weeks from the commencement of the disease. In the majority of cases of scarlatinal dropsy, the cutaneous eruption has been slight, and consequently the patient has been exposed to cold.

The great object of treatment is to relieve the renal eliminative action.

This will be best effected by free purgation.

Full doses of compound jalap powder are very useful; but, at the same time, the patient should be supported by a nutritious diet, and small doses of tincture of sesquichloride of iron may be administered with advantage; for we find a great destruction of the red corpuscles of the blood, and experience has shown that preparations of iron promote the formation of these essential elements of the blood.

The prevailing adynamic type of diseases clearly requires that the old antiphlogistic system of treatment should be repudiated: therefore, in the treatment of such an asthenic disease as scarlatina, the bleeding lancet and mercury may be safely omitted.

How conducive to the advancement of medical science would be the adoption of a rational mode of treatment!

How injurious to the scientific character of the medical practitioner is the use and laudation of specific remedies!" - Dr. T. E. Ruttledge, MRCS, late House-Surgeon at the London Hospital, Dartford, Kent, in "British Medical Journal", 26 February 1859.

The Indications for Treatment

"The removal of the cause: remotus causa tollitur effectus." *- Dr Henry Illoway, MD in "Constipation in Adults and Children", 1897.*

"It yields to the recognition and removal of its cause: cessante causa cessat et effectus. Our therapeutics is always especially satisfactory when we remove pain by removing the cause of it." *- Sir James Sawyer, MD in "Coprostasis: its causes, prevention and treatment", 1912.*

Why I Write this Book

"I have but one object in writing on this subject, which is to present the truth as nearly as possible and assist and aid *the Osteopath* ***to reason from the effect he sees to the cause which, in many cases, is unseen. He should never dally with effects but ever go back to the cause which when corrected results in a disappearance of the effect."*** *- Dr Andrew Taylor Still, MD, DO in "Osteopathy Research and Practice", 1910.*

Posture as Factor in Health

"Man stands on one end of his longitudinal axis, with his centre of gravity poised high over a small base of support.

> *"These 2 points are distanced as much as possible from each other by the fullest possible extension of the vertical axis in which the above points lie. In any movement of the body, or part of the body, there is a relative displacement of the center of gravity, which necessitates an increment of work to maintain the erect or orthograde posture."*

Thereupon results a straight back, a raised and expanded thorax, well distanced from the pelvis, and a flat abdomen.

This posture is the one for maximum respiratory efficiency.

While the key to the normal upright posture is (ontogenetically and morphologically) the position of the pelvis, practically and kinesthetically it lies in the action of the thorax.

In brief, the ideal standing position depends on the thoracic structures.

How this can be reacquired when perverted, and why it should be, will be presented in detail later.

Suffice it to state here that the ideal human standing position—the graceful, efficient body-poise—depends on the thoracic uplift, and that this involves a balanced, unconscious tension in the whole skeletal entity, a normal tonus in all

supporting structures, bony, muscular, tendinous, and ligamentous,— a passive tension of the abdominal walls, maintaining the correlationships of the viscera, and hence also of circulatory and hydrostatic equilibrium.

In the interests of best functionation, the head should be held high- poised.

This is not compromised by moderate changes in its attitude, provided the base be not unduly altered, except for brief periods.

Any continuous sagging of the thorax is followed by less or more compression of the contained and correlated viscera, and impairment of the vital processes is induced.

Next in importance is tonus or passive tension in the erector spinae muscles. Should these relax, the diaphragm is lowered and its rhythmic pumping action lessened: regular suction is not maintained; tidal air is decreased; the portal venous system suffers as well as the systemic veins and lymphatics, and all hydrostatic actions are impeded.

The propulsive (centrifugal) action of the diaphragm is not optional, but compulsory.

The integrity of the pump-like heart action is not more essential to life than the bellows-action of the diaphragm, which is the main agent in emptying the portal venous system, the systemic veins, and the lymphatics, as well as necessary for the in-drawing of tidal air.

The vertebro- thoracic structures, the diaphragm, and the powerful muscles of the spine constitute the primary mechanism of oxygenation.

At the same time, these mechanical agents, acting with the abdominal muscles, exert a constant elastic pull which maintains the viscera and hydrostatic mechanisms in their normal interrelationships and aids in their action, included in which is the promotion of the ebb and flow of fluids.

The downward movement of the diaphragm (centripetal action) must be followed promptly by an up-pull, or all the tides of the body rest.

Any prolongation of the rest-period invites stagnation and waterlogging of tissues. Hence it is plain that thoracic competence and full action of the thorax and diaphragm are essential to the maintenance of vital processes.

The normal body is a marvel of compactness and economic adjustments.

Structural symmetry contributes much to maintenance of efficiency, and even to the prolongation of life.

As a man or woman grows old, increasing defects of bodily carriage and poise become evident and are deplorable from both esthetic and hygienic standpoints.

Deformities caused by posture and costume likewise impair health in many directions.

Postural peculiarities, present in every individual to varying degrees, are too often regarded as mere matters of course, as distinguishing characteristics, and dismissed as of no moment.

A conspicuous stoop, a lateral twist, a sagging waist, high shoulders or hollow chest, bent knees, and like assymmetries are looked upon as merely evidences of bad taste, or as the fingermarks of fate.

A grave significance is added when it is realized that these departures from normal attitudes are in truth exaggerations of developmental faults.

They induce degenerative changes in nerve-centers or conduction-paths, morbid slackness in tissues, impaired nutrition in important structures, compressions of blood-vessels and nerves, all tending to produce vitiations in vital structures.

It is generally assumed — erroneously — that such degenerative alterations merely foreshadow advancing age and are inevitable.

Changes in shape and symmetry not seldom begin in early childhood and are often obvious in adolescents, or young adults, inducing in them deformities similar in kind, but less in degree, than in older folk.

Nevertheless, among some fortunate persons of great age they are practically absent.

These exceptional individuals are usually possessed of extraordinary vigour or stamina.

To show why faulty postures actually do cause hurtful conditions it is necessary to recall that the machinery of organic life is dependent for fullest efficiency upon normal relationships of component parts one to another.

Familiarity with the merest outlines of physiology will make it plain that one set of tissues should bear ontogenetic and exact relationships to others.

It is difficult to realize how the human organism can continue to live and enjoy even moderate vigour if its divinely ordered mechanisms are thrown markedly out of adjustment, mechanically or chemically; even more is this true if they be structurally changed by compression.

Biologically, man's upright attitude places many of his parts at an anatomic disadvantage. Especially is this true of the abdominal organs, hollow or tubular structures containing varying amounts of burdensome fluids.

These drag downward upon the relatively feeble supports.

Hence it is important that they should be emptied promptly and completely, if integrity, both functional and structural, is to be insured.

Loss of functional integrity- may not be followed at once by noticeable disorders, but it constitutes- chronic disability which bears heavily upon the patient's well-being.

When this stasis in the splanchnic circulation is protracted, there follows a complex group of effects impairing the integrity of the self-regulative and protective forces, inviting damage, expediting the devastations of infectious agents, and also lowering mental and moral balance.

So long as the supporting structures maintain their tone, all goes well.

If tonicity is lost, engorgement occurs, especially in the lower quadrants, and waste materials are retained which should move out freely.

All this leads to supersaturation with toxic waste-products, till the resulting condition resembles that of a bit of wood long immersed in dirty water.

When tissue-tone is impaired in the relatively feeble supporting structures, the back sags and bends to compensate for the heavy down-drag, the ribs and chest

fall in, the abdominal muscles are weakened and overstrained, and the hollow organs are compressed.

Not only do all the viscera, solid or hollow, lose their nicety of adjustment (so essential for functional alertness), but a general hypoplasia follows.

Neglect of these acquired defects leads to disorders throughout the domains of nutrition, neuronic action, etc., the result being damaged organs, among which, notably, are those of the respiratory, genitourinary, and reproductive systems.

Whenever an infective process occurs, even of mild degree, an excess of exudation takes place, followed by restricting bands of organized lymph, adhesions, and fibrosities.

Splanchnic engorgement leads to vascular degeneration at the fountain-source of vital activity. Indeed, this "waterlogging" of the lower abdominal organs constitutes the key to an enormous number of morbid states, and is too often not appreciated.

Let us review the desirable features: A straight back is a good index of physical efficiency. By this is meant a backbone with no lateral, and little more anteroposterior curving than is normal for a child of 10 years.

This observation is palpable enough and will be appreciated in certain of its applications, notably the military attitude taught (well or ill) since earliest recorded times.

Other things being equal, the straight, well-set-up back is to be found chiefly in those subjected to careful training in wholesome, symmetrical activities.

In proportion as individuals habitually maintain or return to correct attitudes do they retain vigor, elasticity, correct poise, and motor efficiency.

Next to straightness of the back, it is desirable to preserve elasticity and tone in trunk, muscles, and ligaments.

Next in importance is the (nearly) horizontal position of the pelvis (30 degrees —Goldthwait); and next, the proper carriage of the neck and superimposed head. The whole constitutes the normal, well-poised attitude essential to health, vigour, and full activity.

The effects produced, and maintained, by a (nearly) straight back are as follows: If the backbone is nearly vertical the ribs must become more or less horizontal; hence they open up, fan-like, and the thorax thus becomes more capacious.

This can be demonstrated by anyone standing with the back to a wall and striving to obliterate the lumbar and nuchal curves, i.c., to flatten the hollows in the back and neck.

Normality of posture is essential to organic competence.

The key to the erect or orthograde posture, and hence to skeletal efficiency, to proper visceral interrelationships, and, thus, to an important factor in health, lies in the maintenance of a normal attitude of the thorax.

This assumes the maintenance of a (relatively) straight backbone and horizontality of the ribs.

Relief of disabilities through readjustment of skeletal structures is of recognized efficacy.

Loss of tissue-elasticity bears directly upon respiratory, circulatory, and nutritive competence; also indirectly upon all grosser and some finer functions.

Organic adjustments are as necessary to competency as freedom from undue or prolonged pressure to the hollow and tubular structures.

By restitution of thoracic competence alone so much is added to wellbeing as to justify confidence in respiratory education.

This consists of graded exercises, designed to reinstate lost or impaired function in structures directly concerned in the primary acts of oxygen intake and appropriation.

Every infective process leaves a stain on cellular integrity, producing functional limitations of one sort or another.

On every occasion when an individual is damaged by disease, whether through toxic agencies arising from without or within; from errors of conduct, physical or mental; from accidents, traumata, there follows a lowering of the vital index, marked or slight, which may or may not spontaneously disappear.

The individual can and should be raised to a higher level of efficiency.

Mobilization of joints and muscles, liberation of adhesions and contractures, relaxation of overtension, removal of abnormal compressions on tubular structures, — all these are of fundamental importance, making for nutritive enhancement and limiting the formation of cadaveric, putrefactive, and other toxics.

Not only this, but mobilization of the paravertebral structures (where they have become rigid) exerts a valuable effect on vasomotor competence, by permitting freer circulation in the spinal outlets.

There is no doubt in my mind that training the elasticity of the backbone does render signal service to circulatory activity.

The effect is to enhance vasomotor efficiency.

Indeed, we have here a branch of treatment, kinesi-therapy, worthy of thorough clinical research. Rigidity is by no means only a phenomenon of ageing structures, though it is most conspicuous in senility.

The clinician meets constant evidence of impairment in the tonicity of muscles and of elastic and supporting structures.

This is a highly significant condition and should never be neglected.

Often enough it induces a secondary atony, or flaccidity, resulting in phases of invalidism manifested by mental asthenia and physical depression, especially in the circulatory, digestive and eliminatory domains, which must be reckoned with.

Here Orthotherapy, achieving skeletal, and hence also organic, readjustments, accomplishes much more than any other remedial agency.

Even as an auxiliary treatment it is unsurpassed.

Perhaps the most graphic, urgent and often puzzling disabilities due to loss of mobility have to do with sensory distresses which are then caused." - Dr John Madison Taylor, AB, MD, Associate Professor of Non-pharmaceutic Therapeutics, Medical Department of Temple University, Philadelphia, Pa., in "Orthotherapy", Monthly Cyclopedia and Medical Bulletin, 1914.

Natural course of the Morbid Processes Occurring in the Animal Body

"It will not, however, appear so obvious at first sight, how medical men should fall into the same mistake; seeing that their attention, from the beginning of their studies, must be directed to the natural course of the morbid processes occurring in the animal body, and that their special business is to watch the effects of extraneous influences on these very processes.

And yet when the whole case is candidly considered, it will not appear surprising that the same kind of misappreciation, though in a less degree, should be entertained by them.

When all the circumstances hostile to the attainment of the truth in this particular are duly weighed, I think it will be admitted to be scarcely possible for even the most philosophical student to escape their unhappy influence in the first instance, or to get completely rid of it afterwards.

If the influence is ever wholly overcome, I believe it can only be through the teaching of a long and well- sifted experience, directed and enlightened by an independent spirit, and a due endowment of that philosophical scepticism, comparatively so rare, but essential to all scientific investigation.

The mind of ordinary or inferior power, here as elsewhere can scarcely ever escape from the conventional thraldom in which it has been nursed.

The main obstacles in the path of the medical student and young practitioner, impeding the attainment of the truth in regard to the actual and relative powers of Nature and Art in the cure of diseases, lie rather in the circumstances under which the subjects are presented to them, than in the subjects themselves.

When we have the proper field for investigation before us, there is very little difficulty in obtaining a positive and accurate knowledge of the power possessed by Nature in relieving and curing diseases.

The phenomena to be observed are neither numerous nor very complex; the facts are easily obtained; and the deductions are both facile and sure.

All that is requisite to ensure a positive and pure result is, in the first place, to take care that no artificial interference disturbs the organic processes going on, and, in the second place, to observe and chronicle the progressive events.

It is a case of simple observation throughout; no sifting of premises, no elimination of causes, no grouping or balancing of effects, being requisite to ensure a just conclusion.

The just conclusion - the exact valuation or appreciation of the power under examination - is enunciated in the simple fact, indicating what has been the issue of the organic processes constituting the disease.

The sum total of beneficial modification of the morbid processes, whatever it may be, whether amounting to a complete or an imperfect cure, must be acknowledged to be the exclusive work of Nature; in other words, of the conservative powers inherent in the living body." - Sir John Forbes, MD physician to Queen Victoria 1841-1861, in "Of Nature and Art in the Cure of Disease", 1857.

Chapter 25

Cell Immortality

"In proportion as the human body approaches to a state of perfect balance in point of organic action, the term of life is extended: in proportion as that balance is disturbed, life is shortened." *- Joel Pinney in "The Antidote for the Causes that Abridge the Natural Term of Human Existence", 1847.*

"I would digress here to call attention to an important point.

Every portion of the body is constructed of living cells which perform various functions.

They all, however, receive nutriment from the blood stream; they digest that food, and they evacuate into the blood stream the products of their digestion, so that each cell represents in function the body of which it composes the ultimate element.

To impress on your minds the vital importance of removing from the body the products of digestion as soon as possible, and the very serious harm that results from leaving the evacuations too long in the bowel, I would remind you of experiments made by Dr Alexis Carrel, in the Rockefeller Institute in 1911.

He for the first time succeeded in growing living tissues on microscope slides, for which and other research work he received the Nobel prize.

He supplied to these tissues every day a quantity of nutriment.

He found that, if he washed away the products of digestion of these cells, in other words the material they evacuated, the cells grew and thrived.

If he postponed removing their evacuations, and these were in contact with them for 2 days, the cells did not thrive so well.

If he left the material for 3 days the cells became languid and feeble, and if he left it for a longer period they died.

You see, therefore, that while a moderate amount of saturation of the cells by the products of their digestion lowered the vitality of the cells, a more prolonged insanitary state resulted in their death, in spite of food supplied to them in abundance daily.

The cells, which I saw growing in New York in 1911, are growing and thriving still, and will probably continue to grow indefinitely as long as they are provided with a daily meal and a daily evacuation.

In other words there is no such thing as death of living tissue providing its drainage is perfect and it obtains a sufficient supply of food.

When the drainage of these growing tissues is not properly attended to, the component cells do not die of starvation, but of autointoxication.

The same applies to humanity generally." - Sir William Arbuthnot Lane, in "The prevention of the diseases peculiar to civilization" 1929.

Regeneration of the Body

1. It takes 48 Hours to build New Skin in the palm of the hand.
2. Every 90 days our Blood Cells renew.
3. If the correct protocol is followed: Hair will regrow within 9 months.
4. Several Months to renew Stomach Walls, Liver & Kidneys tissue.
5. Every 3 years the Soft Tissues (Organs) to renew.
6. Every 7 years the Hard Tissue (Bones) to renew.

The Brain Regenerates

Researchers at Princeton University in 1999 found that new neurons were continually being added to the brains. The neurons were added to the cerebral cortex of the brain which is the most complex part of the brain. The cerebral cortex is responsible for higher level decision making and learning. The formation of new nerve cells, a process called neurogenesis. (Please see Brain Regeneration in HBOT section, or book "Longevity the Untold Story)

The Kidney Regenerates

There is a reported case of a North American man, who after being placed on dialysis, and advised to seek a new kidney transplant by the Medical Trade. Not willing to be neither on dialysis nor in surgery, he pursue a 100 day raw fruit and vegetables diet. After which his kidneys fully regenerated.

Longevity

Organ Deterioration - Which is called: **Old Age**

The deterioration of the Organs of the Body are called Ageing.
This visible deterioration of the organs of the physical body are viewed by the spectator as the body changes in its appearance and becomes older in aspect, this phenomenon is commonly associated with age.

Organ Failure - Which is called: **Death**

People die from organ failure not old age. Organ failure is the result of years of neglect in the up-keeping of the body.

Organ Rejuvenation - Which is called: **Longevity**

Youthfulness is attained by the capacity of each individual in managing the halting of the deterioration of each cell that composes the organs of the physical body. It becomes necessary that a protocol is understood followed and maintained.

No One Dies of Old Age

Old people do not die from old age.

A persons body dies because of specific biological system failures that are caused by a sequence of consequences that can in principle be traced back to an accumulation of cellular and molecular damage, and that damage is a direct by-product of the normal operation of metabolism.

The Emunctologist knows that by the application of specific Treatments that in the opinion and research of the Hospitallers Order of the Good News substantially extend lifespan and seem to suppress multiple pathologies that otherwise would limit the lifespan, thus in principle suppressing the entire ageing process.

A current conception of anti-ageing treatment imagines a primary cause of ageing that is causally upstream of, and the cause of, all age-related pathology. Intervening in this ageing process thus protects against the totality of age-related diseases.

Coma & Death

"Coma and death are the result of various organs, including the brain, becoming dysfunctional because increased toxic waste cannot be detoxified and eliminated." - Dr. Bernard Jensen, DC in "Guide to Better Bowel Care", 1999.

Biological Immortality

From the biological point of view, science knows that immortal cells exist.

Bacteria are unicellular organisms that do not age, so that as long as they do not get sick, are eaten or destroyed by other organisms, bacteria can live indefinitely.

In multicellular organisms science has also discovered 2 types of cells that do not age. Among the immortal cells there are some that are good and others which are bad. The good cells, are the germinal ones that do not age and are in charge of the reproduction of the species.

The bad cells are cancer cells, these also do not age and are the result of mutations.

What those who have preceded us say?

"Man is either the master of himself, or his appetite and sensual pleasures master him. If the former, he enjoys health until worn out; and he should go down at from 90 to 150 years of Age." - Dr John Henry Tilden, MD

"If you have the right diet, the body is able to live 150 maybe 200 years in the right environment". - Dr F. Batmanghelidj, MD

Carrel started an experiment on 17 January 1912, he placed tissue cultured from an embryonic chicken heart in a stoppered Pyrex flask.

He maintained this living culture for 29 years with daily supplies of fresh nutrients, then one day because the laboratory assistant neglected to rinse them with fresh nutrients solution.

The experiment, came to an abrupt ending, the experiment was conducted at the Rockefeller Institute for Medical Research.

After the trial he stated that:

"The cell is immortal. It is merely the fluid in which floats which degenerates. Renew the fluids at intervals, give the cell something upon which to feed and, so far as we know, the polsation of life may go on forever." - Dr Alexis Carrel, MD

"In the one aged 40... That is, he is suffering from premature senility, and in the great majority of cases, in physical appearance, habits and powers he is aged 55." - Dr Ernest Clarke, MD, FRCS

"Why different biological species and even different systems within the same organism exhibit various rates of aging." Voitenko and Polyukhov 1986; Hadshiew et al. 1999.

Sir William Arbuthnot Lane, MD MS, Bt, CB, FRCS (1856–1943)

British surgeon and physician. He mastered orthopaedic, abdominal, ear, nose and throat surgery, while designing new surgical instruments toward maximal asepsis.

He thus introduced the "no-touch technique", and some of his designed instruments remain in use.

In the early 1920s, as an early advocate of dietary prevention of cancer, Lane met medical opposition, resigned from British Medical Association, and founded the New Health Society, the first organisation practicing social medicine.

Through newspapers and lectures, sometimes drawing large crowds, Lane promoted whole foods, fruits and vegetables, sunshine and exercise: his plan to foster health and longevity via three bowel movements daily, and explained the association between constipation and illness as due to autointoxication. Tracing diverse diseases to modern civilization, he called for farmland's return to the people.

Dr Alexis Carrel, MD
Nobel Prize in Physiology or Medicine (1912)

L. Hayflick has shown that a cell has a limited number of divisions, equal to the so called "Hayflick's Limit." However, L. Franks and others (Loo et al. 1987; Nooden and Tompson 1995; Frolkis 1988), have shown that the number of cell divisions can be considerably greater than that stipulated by the "Hayflick Limit", having practically no limit at all.

Not very widely known experiments carried out by L. Woodruff and S. I. Metalnikov in 1917, showed that thousands of consequent generations of a single cell organism were obtained by transferring every new generation of the initial cell into a fresh nutrient solution (Frolkis 1988a).

During the experiments performed, none of the cells observed showed any degeneration whatsoever.

The cells were divided normally in compliance with their intrinsic program.

Numerous experiments were carried out for decades, until final artificial interruption. No appearance of dead cell "corpses" were ever detected.

Based on these observations, L. Woodruff concluded that ageing is not a major property of living matter, i.e., that there are no mechanisms of ageing in the cell organism itself, but ageing could be caused by hostile "poisoned" cell surrounding medium.

According to Woodruff, this poisoning results in the blocking of physiological functions of the membrane, which in turn leads to dysfunction of the cell's inner system.

In the end, the successive generations would fail, and at some moment cell division would cease (Frolkis 1988a). A few years before 1912, A. Carrel drew similar conclusion about possibility of the permanent life of the cell tissue (Carrel 1912).

Minor alterations in gut bacteria may extend lifespan.

A concept that has been around since the early 20th century is now ringing true in scientific studies. In the most recent study linking the microbiome with longevity, researchers injected worms with the E. coli bacterium strain.

Altering a single gene in the strain in some of the worms extended their lifespan. (Microbial Genetic Composition Tunes Host Longevity, 2017)

Elie Metchnikoff
Nobel Prize in Physiology or Medicine (1908)

The work of Elie Metchnikoff Considered a founding figure of modern immunology, gerontology aging and longevity science.

Elie Metchnikoff devoted much of his research to the inner workings of the immune system. His most notable discovery was that of "phagocytes", bacteria-eating cells which he realized serve as protectors against infection.

This led to an appointment to the Pasteur Institute in France and ultimately the prestigious Nobel Prize in 1908.

In his later years, Metchnikoff began to turn his attention to the concept of human longevity. His curiosity piqued by his observations of the unusually large number of centenarians in certain sections of Eastern Europe, he began to develop his own scientific theories on how lifespan could be extended.

His work laid the groundwork for aging research and continue to influence scientists today.

"**Microbiome restoration diet improves digestion, cognition and physical and emotional wellbeing.**" - Kate Lawrence, Jeannette Hyde, 14 June 2017.

Dr Henry Tissier

Élie Metchnikoff is often considered the "father of innate immunity" because of his identification of phagocytosis and its primary role in fighting infection.

Today, Metchnikoff is recognized for his description of lactic acid-producing bacteria in the intestine and how enteric microbes may promote or hinder intestinal health and human longevity. The work of Metchnikoff and Henry Tissier at the Pasteur Institute that established probiotic research and provided early insights into the intestinal microbiome.

Dr John Harvey Kellogg, MD

Dr. Kellogg proposed biologic living, which for the most part meant preventive health. His goal was to help people stay well rather than to recover from illness. He stressed a simple diet closest to the most natural. He believed in proper rest, exercise, fresh air, and healthful dress, with proper diet being the most important.

Dr Alexander Bryce, MD

"When too little fluid is supplied, the blood maintains a higher specific gravity and the poisonous waste products of tissue or cell change are only cast off very imperfectly. The body is, therefore, poisoned by its own excretions, and it is not too much to say that the chief reason of this is because amount of fluid has not been supplied to carry off in solution the waste matter the cells manufacture."

Lorande Loss Woodruff

"Not very widely known experiments carried out by L. Woodruff and S. I. Metalnikov in 1917, showed that thousands of consequent generations of a single cell organism were obtained by transferring every new generation of the initial cell into a fresh nutrient solution (Frolkis 1988). During the experiments performed, none of the cells observed showed any degeneration whatsoever.

The cells were divided normally in compliance with their intrinsic program. Numerous experiments were carried out for decades, until final artificial interruption.

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Vladimir Dilman

"The normal ageing process is a disease, or more precisely, a sum of diseases of homeostasis, i.e. diseases caused by the disruption of the law of constancy of the internal environment of the organism. …

Indeed, I am deeply convinced: Any persistent deviation of homeostasis is a disease. And even if it happens to everybody, it is also dangerous for everybody.

Indeed, people who consider ageing to be a norm, quietly ignore the fact that ageing progressively increases the risk of death from normal diseases that are based on impairment of homeostasis. …

Everything that normalizes the activity of hypothalamus and reduces the use of fat as fuel, serves to prevent cancer.

This is the reason for the beneficial effect of rational diet, high physical activity…" - Vladimir Dilman (1925–1994) prominent Russian scientist and physician, the neuroendocrine theory of ageing was proposed by him in the 1950's, in "The Big Biological Clock (An Introduction to Integral Medicine)", 1982.

The Ageing Process Delayed & Reversed

"Recent research "Cognitive enhancement of healthy older adults using hyperbaric oxygen", Aging, 15 July 2020, found that when healthy adults over the age of 64 were placed in a pressurized chamber and given pure oxygen for 90 minutes a day, 5 days a week for 3 months, not only was the ageing process delayed - it was actually reversed. Some 35 adults over the age of 64 were involved in the study and were administered Hyperbaric Oxygen Therapy (HBOT) utilizing 100% oxygen. Repeated intermittent hyperoxic (increased oxygen level) exposures induced many of the mediators and cellular mechanisms that are usually induced during hypoxia (decreased oxygen levels) – called the hyperoxic-hypoxic paradox.

"The oxygen fluctuation we generated is what is important. We are not just slowing the decline, we are going backwards in time." - Prof. Shai Efrati, Tel Aviv University's" - in "The Jerusalem Post", 21 November 2020.

Chapter 26

The Relationship of Man to His Creator

"I will recompense him who would serve in that that would make thine brother nearer to that understanding of the relationship of man to man and man to the Maker." *– in "Book of Emmanuel or God among men".*

This chapter is toward "One Concept" of truth toward relationship of man to the Maker, and Maker's relationship to man.

"By the nobler of these powers and capacities, all of which act during life through the medium of the brain, and are affected by its health and disease, is man distinguished from the beasts which perish; and to them he is indebted for the privilege which he alone possesses, of knowing and worshipping the one true God, the Author and Preserver of his being." *- Dr Andrew Combe, MD in "Treatise on the Physiological", 1848.*

"I have listened to the theologian. He theorizes and stops. I have listened to the materialist. He philosophizes and fails. I have beheld the phenomena given through the spiritualist medium. His exhibits have been solace and comfort to my soul, believing that he gives much, if not conclusive proof, that the constructor who did build man's body still exists in a form of higher and finer substances, after leaving the old body, than before." *- Dr A. T. Still, MD, DO, in "Bulletin of the Axis and Atlas Club", September1903.*

On Human Evolution

The Emunctologist will come to know that the Creation of Man, is a separate Creation from that of the Creation of the animals.

In this regards, it is known, that the blood from primates is incompatible with that of the Human Blood.

And "Y" Chromosomes, are of a different sequence, thus the theory of direct Human Evolution from primates becomes in one single word: groundless.

Humans are a separate Creation from that of animals, with the comprehension that some principles where used, from the animal blueprint and improved upon same.

Sufficient Evidence

"You will have sufficient evidence from the fabric of the body and circulation and the secretions of humours that there is a God that made it; and believe that He appointed you to the art of preserving that curious machine and to cure its defects.

And that He has obliged you to be industrious, compassionate, charitable, humble, prudent in words and easy in conversation and, above all, to depend on the Creator of human bodies for your success in preserving its life and operation for the term He has appointed you to it." - Sir John Floyer, MD considered the Father of English Hydropathy in "Advice to a Young Physician", 1734.

"The Lord hath created the physician, and of the Most High cometh Healing." - Ecclesiasticus 38:1-2

For God has not purposed or willed that any soul should perish, but purgeth everyone by illness, by prosperity, by hardships, by those things needed, in order to meet self.

For when everything else fails, there is only Prayer

*"So Abraham **prayed unto God: and God healed Abimelech, and his wife, and his maidservants".** - Genesis 20:17*

Memorandum

"The following memorandum and prayer, having been found among the late Dr John Mason Good, MD papers, are annexed to this work, in compliance with the directions which he left upon the subject, 27 July 1823.

This form of prayer, which I purpose to use, among others, every morning, so long as it may please God that I shall continue in the exercise of my profession; and which is here copied out, not so much to assist my own memory, as to give a hint to many who may, perhaps, feel thankful for it when I am removed to a state where personal vanity can have no access, and the opinion of the world can be no longer of any importance.

I should wish it to close the subsequent editions of my Study of Medicine.

Form of Prayer

"O Thou great Bestower of health, strength, and comfort grant thy blessing upon the professional duties in which I may this day engage.

Give me judgment to discern disease, and skill to treat it; and crown with thy favour the means that may be devised for recovery: for, with thine assistance, the humblest instrument may succeed; as, without it, the ablest must prove unavailing.

Save me from all sordid motives; and endow me with a spirit of pity and liberality towards the poor; and of tenderness and sympathy towards all: that I may enter into the various feelings by which they are respectively tried; may weep with those that weep, and rejoice with those that rejoice.

And sanctify thou their souls, as well as heal their bodies.

Let faith and patience, and every Christian virtue they are called upon to exercise, have their perfect work: so that, in the gracious dealings of thy Spirit and of thy Providence, they may find in the end, whatever that end may be, that it has been good for them to have been afflicted. Amen." - Dr John Mason Good, MD, FRS in "The Study of Medicine", Vol.II, 1835.

Essential to Good Health is a Cheerful Optimistic Spirit

"If we are right ourselves, if we are in happy adjustment with natural and moral law, we are to expect good and helpful and heart en-thrilling things.

No good thing is with held from those who love God. They flow to us as naturally as an invited curse or self-caused shame and sorrow would flow.

Optimism is a nourishing stimulant to the vital powers and to all of the functions of human life. While "God is in His Heaven, all is well with the earth." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, MD, in "The New and Scientific Treatment of Chronic Diseases", 1914.

A Psalm to Asaph The Chief Musician to both David and Salomon

"Thou hast covered me in my mother's womb. I will praise thee; for I am wonderfully made: marvellous are thy works; and that my soul knoweth right well.
My substance was not hid from thee, when I was made in secret, and curiously wrought in the lowest parts of the earth." *- Psalm 139:13-15*

"Truly we are made "in secret", for there is much we do not yet know about the processes of our creation." *- Dr Bernard Jensen, DC, in "Guide to Better Bowel Care", 1999.*

"And said, If thou wilt diligently hearken to the voice of the Lord thy God, and wilt do that which is right in his sight, and wilt give ear to his commandments, and keep all his statutes, I will put none of these diseases upon thee, which I have brought upon the Egyptians: for I am the Lord that healeth thee." *- Exodus 15:26*

"And ye shall serve the Lord your God, and he shall bless thy bread, and thy water; and I will take sickness away from the midst of thee." *- Exodus 23:25*

Music and Aid to Health

"Music is the language of the soul, and what a wonderful language it is! Music vibrates through man's being and rouses him to a higher and nobler life. It has been said that the opera is one of man's best inspirations. It acts as an invigorating psychic tonic. It revitalises and stimulates the organs of the body so that they function more normally. It soothes the sick and stimulates the well; and besides, it instructs and entertains.

Physiological Effects of Music

All music lovers know that music, when properly applied, is an aid to health. It will promote digestive functions, strengthen the breathing apparatus

(diaphragm, lungs and bronchial tubes), relieve fatigue and give grace to the movements of the body.

Folks with an irritating temper can be calmed, the melancholic roused and the insane soothed by the healing power of music.

It will contract or relax your muscular, vascular and nervous system, thereby toning the liver, stomach, intestines and other internal organs.

Sanatoriums, hospitals, and other health institutes should have musical programs as part of their schedule, as it would not only cheer and give hope, but it would also aid materially an early recovery.

The violin and piano should be as much in evidence at a hospital as is now the instrument cabinet and operating table. In fact, the greater the utilization of one, the less need there is for the other.

A time may yet come when doctors will prescribe a certain number of minutes or hours of music.

Would it not be wonderful?

Yes, musical prescriptions will some day be a reality; the sooner the better for the people." - Dr Simon Louis Katzoff, MD, in "Timely Truths on Human Health", 1921.

Chapter 27

The Healing Crisis

"Today one calls "crisin" that healing act of nature, through which the matter of the illness, which previously had contributed to its appearance, is driven out of the body by proper and clear Emunctories, and which, as a result, is freed from its decline and illness." - in "Johann Zedler Encyclopedia", 1733.

"In severe cases of recovering from an advanced chronic health condition, and during the healing natural process there is what is called a Healing Crisis or Healing Reaction, this is a natural phenomena that occurs during healing, and it is normally associated with both toxicity and impurities leaving the body, during this time both toxicity and bacteria, is removed from the body gastrointestinal canal and the bloodstream." - Dr Alexander Bryce, MD, CM, DPH, in "Intestinal Toxaemia; or, Auto-Intoxication in the Causation of Disease", 1920.

The Healing Crisis, Herxheimer Reaction

When a patient feels worse after a treatment Healing Crisis.

A Jarisch–Herxheimer reaction is a reaction to endotoxin-like products released by the death of harmful microorganisms within the body during antibiotic treatment.

Efficacious antimicrobial therapy results in lysis (destruction) of bacterial (pathogens) cell membranes and other "debris", and in the consequent release into the lymphatics and bloodstream of bacterial toxins, resulting in a systemic inflammatory response.

"If after you have cleansed your colon and followed a healthy diet, and continue to live a healthy lifestyle, you may or may not at some time experience what is known as a healing crisis.

A healing crisis is nothing to fear. On the contrary, this type of crisis is what you have been working for, and you ought to welcome it.

A healing crisis is a blessing in disguise. It is the result of an industrious effort by every organ in the body to eliminate waste products, and it sets the stage for the regeneration of weakened tissues. The healing crisis conforms with Hering's Law of Cure and is a natural result of it. Through a constructive and healthful process involving cleansing, good nutrition, and improved lifestyle, old tissues are

replaced with new. The healing crisis is called a crisis because it makes you feel as if your acute condition has returned. You experience the same symptoms you had when your condition was at its worst.

In a disease crisis, you also experience these symptoms, but the symptoms are due to tissue breakdown and dysfunction, not renewed tissue activity and waste elimination.

Elimination is the most important difference between a healing crisis and a disease crisis. As part of its preparation for the healing crisis, the body eliminates toxic wastes including any chemicals and drugs.

Drugs are suppressive and may cause iatrogenic disease (a condition brought on by a caretaker's diagnostic procedures or treatment), which only compounds the original problem. More frequently, they cause patients to suffer annoying side effects. Physicians all too often then prescribe additional medications for the side effects.

Another sign of a healing crisis is that prior to and during the crisis, bowel elimination is very good.

The bowel movements are natural and occur without difficulty.

All the elimination organs do their part.

In a disease crisis, elimination is usually not very good before the crisis and is unsatisfactory or stops completely during the crisis.

In a healing crisis, catarrh and waste that have been stored in the body are eliminated.

The crisis is the final purifying process as the last of the waste is liquefied and thrown off. In a disease crisis, catarrh is not eliminated, and mucus is old, thick, chronic, and congestive. Both healing crises and disease crises can come without warning. In general, you will know you are going through a healing crisis if you felt wonderful in the days prior to its onset.

A healing crisis comes as an explosion, so to speak.

It comes on suddenly, out of the blue, just as you're feeling your best.

You will wonder how it could have come on so suddenly just when you seemed to have put your health problems behind you.

A healing crisis comes after the exchange of old tissue for new has been completed.

It comes only when there is enough energy and activity available to the body as the result of the old, debilitated tissue being replaced with new.

The old tissue has spent itself, and the new tissue, built from life-giving foods as well as through health-building processes, is strong and vital.

When the body has regained its strength, it cleans house and violently throws off the old wastes in the form of a healing crisis.

To achieve regeneration of tissue, the body must pass through three stages.

These three stages are the elimination, the transitional, and the building stages.

The healing crisis usually occurs near the end of the transitional stage, which is when the new tissue has matured sufficiently to take on the function of a more perfect body.

Healing crises usually last about 3 days

They start with a slight discomfort, which quickly increases in severity until the point of complete expulsion is reached. During a healing crisis, a person may suffer old symptoms more severely than ever before.

The person must "wait out" the crisis while continuing to follow a health-building path.

Yielding to the temptation to resort to (allopathic drug) medications during this acute period will serve only to suppress the symptoms. The person will then have to again go through the crisis at a later time in order to be well.

Following the acute stage of the healing crisis, the discomfort diminishes. If the person's energy is low, the crisis sometimes lasts for a week or more.

Healing crises affect patients with stronger vitality and greater energy more profoundly. Persons whose energy is too low do not have a healing crisis.

Such persons must work to rebuild their health and energy until their bodies can manifest a crisis.

Be assured that nature will not allow a healing crisis to take place before its appointed time." - Dr. Bernard Jensen's, DC in "Guide to Better Bowel Care", 1999.

Chapter 28

The Treatment Plan

"Palliative measures, although addressed to symptoms, and not to the disease per se, may, nevertheless, be to a greater or less extent curative by diminishing the general disturbance and consequent exhaustion incidental to the continuance of suffering." - Austin Flint, MD, Professor of the Principles and Practice of Medicine, Bellevue Hospital Medical College, Long Island College Hospital, in "Conservative Medicine as applied to Therapeutics", The American Journal of Medical Sciences, 1863.

"The possibility of two co-existing diseases must always be considered: in making a double diagnosis caution must however be exercised, for such a procedure too often affords a facile means of explaining multiple manifestations of a single disease process." - Dr. H. Douglas Wilson, MD in "Edinburgh Medical Journal", 1939.

Did the Master Heal all Individuals Alike?

Did He not use the word, water, clay and even His hands, even food to relieve the condition of the afflicted?

So in like manner, following the Master example the Emunctologist must know that there are different Therapeutic Modalities which singular and combination may achieve that which may be in the majority of cases all that is needed to resolve any acute and chronic condition.

Palliative Care

"Palliative Care is an area of care that will provide comprehensive care for a person who is facing an illness that threatens the continuity of their lives.

This care goes beyond the person illness, we have a perspective that doing everything is taking care of the body. But in palliative care its much more than just medicine, we extend care.

In Palliative Care you contemplate all the sufferings of the person, in addition to the illness, you will take care of the Physical, Emotional, Family, Social and Spiritual suffering, so that this person can have a sense of quality of life, of dignity, and of value in this life.

The person receiving Palliative Care, knows that life is worth living, in anytime he is, no matter, if he is in the diagnosis level.

With the first attitude of welcome, with the words: "we will take care of you", the Palliative Care practitioner, starts in the right place, "we are going to take care of you".

And being part of the whole process, care for the disease, but it goes much beyond that, a person receiving Palliative Care, essentially has much more quality of life, has a lot more sense of security regarding the care it receives.

And recently, we had the honour, of technically prove with numbers that people do live longer with Palliative Care." - Dr Ana Claudia Quintana Arantes, MD, in interview by Pedro Bial in "Red Globo TV", 2018.

Treatment Plan

Emunctology deals with all those conditions where the Emunctories, their function has an impediment, hindered or its overwhelmed.

The Emunctology Specialist should be able to identify and offer the correct and suitable Therapeutic Approach, Treatment Plan, for each type of conditions.

A solid understanding of the Principles of Emunctology, leads to the correct application in **Clinical Practice** of proper, useful Therapeutic Methods, that in their application, will be either of aid in improving, or resolving any Health Condition that may be present.

It is of the utmost importance that the Emunctologist, be able to distinguish between the cause and the effect, and to be able to apply the best therapeutic method or agent in restoring the organism to health.

Thus, Emunctology properly applied in Clinical Practice, is the intelligent form in which both:

1. Hydropathy

2. Neuropathy (Osteopathic Manipulation, and Chiropractic Adjustment) find their correct application in their time and manner of their full useful therapeutic effects.

Thus all Emunctologists, follow a Treatment Plan, which may include either one, several, or all of the following useful therapeutic methods:

1. Hydropathy: Hydropathic Treatments, which are always useful in their specific, correct and timely application both externally and internally.

2. Neuropathy: Body Manipulation, and Adjustment, this either; muscle relaxation, or spinal adjustment. Given in a Neuropathic manner, any needed Osteopathic Manipulation or Chiropractic Adjustment.

3. Nutrition: A proper Healthy, balanced Diet, with special attention to food combining. And whereby among other things, refined products, and fried foods, have no place in the diet of any healthy human being. Not to overcrowd the digestive system with foods that are difficult of digestion. Do not combine potatoes, white bread, spaghetti or beans, any two of these at the same meal; though all of these may be taken separately at different times.

4. Specifics to condition: These are therapeutic useful elements from the classical Materia Medica, (non-synthetic).

5. Physical Exercises: These are useful therapeutic physical exercises. Which may include exercises as simple request for the individual to walk, in a certain and specific manner and amount.

6. Mental & Spiritual Purpose: Clarification of the ideas and ideals of the individual, providing support and guidance for their own awareness. Which ever their choices are, the choices need to be made by self, but the individual must have his ideas and ideals clearly established, which is part of the Treatment Recovery Plan for some challenging health conditions.

7. Recreation & Rest: In life and more so during a treatment plan, there must be always the allowance and provision for some time every week for both recreation and rest.

What were the Methods used by Him, upon Whom each one calls?

Just by speaking, just by prayer, just by fasting? No.
Was there not anointing?
Was there not washing?
Was there not Mechano-Therapy?
Were not even other conditions used in combination with them all?

For indeed it is as has been given from the beginning:

"Know, O Israel, the Lord thy God is One!"

Then, that which is good, that which is helpful, that which is patient, that which is longsuffering, All enters into the experience of the individual that the soul may become more and more aware Of that truth; that the Lord is One in Us!

Then use all. We have a body-physical, we have a body-mental, we have a body-spiritual.

They are One, yet each has its attributes that function either separately or coordinantly.

The active force in all of these is of the spiritual nature; but release same within each sphere, so that the spiritual forces may function, not so much by the use of drugs, but rather those stimulations as indicated that may only aid the impulse for the activity of the creative energies and forces through the system.

All healing is One, whether in the laying on of hands, by word of mouth, by mechanotherapy, mechanical applications or what not.

God is the Creative Force that gives life, not the medicine or the application!

Suggestive Therapeutics

Suggestive Therapeutics: There are some conditions where suggestive therapeutics are important and have their place. Such as in conditions of habit need to be overcome, and also in cases of autism among others.

The work of Dr Franz Friedrich Anton Mesmer, MD is of great importance in the study and comprehension its workings and of its Therapeutics applications.

Therapeutic Suggestions

"The psychic treatment of disease is almost as well recognized among the laity as other systems, and even its philosophy is better understood by its more intelligent practitioners and patients than the rank and file of the medical profession know of the action of their drugs.

The psychic treatment of neurotic diseases, more particularly functional, is becoming more and more widely practised in proportion as it is better understood. To say that it is and always has been the property of medical men, recognized and used, is only half the truth, for it has never until within the last 25 years or so been systematically or intelligently recognized or employed, as therapeutic suggestion is but of very recent application. It forms the true essence of all forms of mental healing, such as Christian science, divine science, spiritual science, magnetic healing, etc.

The study and practice of psychic treatment is not only interesting but one of the greatest aids in the cure of the sick, but it is just as Jesus says in his philosophy:

"If any man will know the doctrine he will know if it be true or if I speak of myself."

I have been a close student and practitioner of psychic treatment for selected cases for over twelve years and I would not be without its aid at any price, and applied intelligently and in suitable cases it will never fall of the desired result.

Better to learn what the principle is (suggestion pure and simple) and teach the people, and apply it ourselves as a therapeutic adjunct to our medical or physio medical treatment, and we shall cease to be looked upon as we are today, with less

and less favour, as opposing truth and progress, and trying to impose medical bondage upon the people. From personal knowledge I know how incompetent any person is to speak about psychic treatment or suggestion who has not given the subject close study and experimented. This might be said of many other subjects of human interest, but I think it is particularly so regarding psychic investigation and study, for it borders closely upon the confines of the soul.

The role of suggestion is in the realm of functional and nervous diseases or those just bordering upon the transition from functional to organic.

Here, by judicious mental and physical suggestion, we turn back the current and cause it to flow into the normal life stream of nutrition. I want to illustrate in closing a few cases from my own practice.

Case 1. A young woman 26 years old came to me with a story of an accidental falling upon the horns of a cow. The cow was just as much frightened as she, and between the two she managed to get free without serious physical injury, but night after night, for two years, she retired to dream over the occurrence in all its frightful vividness until she loathed sleep under such conditions. It began to prey upon her general health and she lost appetite, flesh, strength, ambition, and the desire of life. Several physicians treated her along various lines, but in such cases drugs only aggravate. She was becoming hope less, and entertained visions of insanity, when she was directed to me. One month of simple direct suggestion removed every unpleasant symptom, restored her health and strength, and she still remains perfectly well, though it is now two years since she began treatment.

Case 2. Young married woman of 30, with a neurotic family history; tormented by phobias. Whenever she sleeps she is constantly awakened by fear of death something always dreadful about to happen.

She has lost health and strength, developed constipation, indigestion, anemia, and general loss of nutrition. One month of suggestion changed the whole complexion of things and restored her to mental and physical health and happiness.

Case3. Young woman of 27,with neurotic family history. Nervous sick-headache since childhood, attacks occurring every two weeks followed by great weakness and prostration. Sleepless, dyspeptic, emaciated, constipated and general very low physical condition. She had been treated by physicians of different schools for years, including Osteopathy, etc., with but little relief. It required three months of careful persistent suggestion to restore her to health, but she is now enjoying life in every way. At first she could not walk a block, now she is taking care of a house and family, doing all the work without undue fatigue.

Case 4. Young man of 20, with good family history. Later it began to prey upon his mind and he became morose, a recluse and refused to see anyone. Developed melancholy and intimated suicide. Was taken to various physicians and specialists

and changes of climate were advised. He became wasted to a shadow, and anemic, constipated and dyspeptic.

Owing to his slowness to exert himself or take to treatment it was nearly a. year before he was restored to normal health and strength.

Case 5. Young woman of 22. Hysteria. After treating her from 20 August to 10 November by remedies, homeopathically, eclectically and with alkalometry, and empirically, without effect, she was failing constantly and the family becoming discouraged, I advised suggestion. One month of daily suggestion restored the normal balance and three months later she weighed twenty pounds more than at any time in her life.

None of these cases were treated medicinally during the time they were taking psychic treatment and all were treated by simple directed suggestion. I do not use hypnotism, as I am convinced better results may be obtained without it; besides, its application is too limited, there being so few who are suggestible to hypnosis.

I strive to strengthen the will, induce confidence and encourage the patient to look upon life optimistically.

To this I add breathing exercises and the right use of water and food, which may or may not be deemed important. Some practicians disregard them entirely.

These are just 5 cases from everyday practice, illustrating the roll of psychic treatment and showing the futility of material remedies. They all betray the neurotic condition and readily yield to psychic treatment, and to no other.

I could multiply these manifold and recite cures by this method which, if I were to tabulate them here, would not be believed except by those who had like experiences." - Dr F. W. Southworth, MD, Tacoma, Washington in The American Journal of Clinical Medicine, Vol.18, 1911.

Meditation Therapeutics

Meditation as a Therapeutic effect directly upon the Central Nervous System, thus and effect in all parts and organs in reach and under the control of the Nervous System.

Its application is invaluable, in all conditions related to the nervous system, and affected by it. The wise person will have al least a few minutes everyday of meditation in order to quieten the body nervous system.

Music Therapeutics

"Mounting evidence indicates that making music, dancing, and even simply listening to music activates a multitude of brain structures involved in cognitive, sensorimotor, and emotional processing (Koelsch & Siebel, 2005; Koelsch,Siebel, & Fritz, 2010; Zatorre, Chen, & Penhune, 2007).

Functional neuroimaging studies showed that music can modulate activity of all major limbic and paralimbic brain structures; that is, of structures crucially involved in the initiation, detection, generation, maintenance, termination, and modulation of emotions.

Future studies could thus also investigate whether the method presented here results over the course of several weeks in functional and plastic changes (for example, changes in hippocampal volume) during the treatment of affective disorders such as depression, pathologic anxiety, and post-traumatic stress disorder (which are partly related to dysfunction of limbic structures such as the amygdala, the NAc, and the hippocampus, as well as of para-limbic structures such as the orbitofrontal cortex).

Notably, emotions also are closely linked to peripheralphysiological effects, i.e., emotions always have effects on the vegetative (or autonomic) nervous system, the hormonal (endocrine) system, and the immune system." - Stefan Koelsch, Freie Universität Berlin, Berlin, Germany, Kristin Offermanns, Peter Franzkein, Max Planck Institute for Human Cognitive Neuroscience, Leipzig, Germany, in "Music in the Treatment of Affective Disorders", Music Perception An Interdisciplinary Journal, April 2010.

Electricity Therapeutics

"The knowledge that nerves and muscles can be activated by electrical stimulation is almost as old as knowledge of electricity itself. The reaction of degeneration (loss of the response to a short-duration or faradic stimulus with retention of the response to a long-duration or galvanic stimulus), which may follow denervation of a muscle, was first described by Erb in the last century." - in "British Medical Journal", 27 Oct. 1962.

The field of Electrical Therapeutics is specific. All information is found on the method and its correct application in the Central Archives of the Hospitallers Order of the Good News.

Therapeutics

"Modus Operandi: Conservatism tries to avoid being led into injurious medication by such loose expressions as "substitution of healthy for diseased action.

Finally, conservatism recognizes as a general indication in chronic inflammations, to place and maintain the body in the best possible condition, by means of tonic remedies, adequate alimentation, and the hygienic influences which conduce to that end.

It is consistent alike with experience and good sense, that, other things being equal, the nearer the normal standard the condition commonly known as the

general health, the better the prospect of recovery from chronic inflammation, and the better fortified is the system to endure its continuance.

The aim of conservative medicine being to afford protection against disease, on the one hand, and, on the other hand, against needless and therefore injurious medication. And the physician is now satisfied, if he cannot arrest or abridge these diseases, to pursue an expectant course; he watches symptoms, and meets indications as they arise in individual cases.

He may see nothing which calls for medication during the progress of the disease.

Hygienic conditions receive his special attention, the importance of these having come to be more and more appreciated in proportion as remedial agencies have been used with greater discrimination.

Palliation of symptoms and supporting measures often constitute the sum and substance of his treatment. The latter, if occasion require, he employs boldly and perseveringly.

In certain cases, when his great object is "to obviate the tendency to death", he supports his patient as he would hold up a drowning man, until, by vigorous exertions, at length the shore is reached.

No branch of the science of medicine has excited greater interest, of late years, than the study of structural changes. Here the application of the microscope has been of inestimable service, by unfolding, first, the minute structure of organs in health, and, second, the alterations due to disease. How much light has been shed on our knowledge of the various lesions of different organs — the brain, liver, kidneys, heart, etc.!

But, complete as our knowledge of appreciable changes of structure may become, this knowledge is but the scaffolding raising us higher and higher toward the primary conditions of disease.

In other words, structural changes are the effects of prior morbid actions, and the latter must be understood before we can comprehend fully the essential character of diseases.

Thus, our knowledge of the changes which the cerebral arteries undergo from the deposit of fatty granules, enables us to explain the occurrence of apoplexy; our knowledge of the fatty degeneration of the muscular fibres of the heart, affords an explanation of the weakness of that organ in certain cases and the occasional rupture of its walls; the presence of newly developed fibrous tissue in the interlobular spaces of the liver in cirrhosis, renders the occurrence of ascites intelligible; the loss of the secretory cells of the convoluted tubes of the kidneys in certain affections of the kidneys, accounts for the production

of uraemia—and numerous additional examples might be cited to show how important in their bearings on practical medicine are the developments for which we are indebted to the microscope.

Still, morbid anatomy, in its widest scope, is only but a province of the natural history of diseases.

It describes appearances; it traces the different steps of morbid alterations, and

strives to ascertain their points of departure — and this is vastly important; but the prime source of the lesions which it studies underlies and precedes the earliest of the changes which the senses can discover.

Take, for example, Bright's disease, and admit the researches of Dr. George Johnson and others to have established that the structural changes incidental to this disease have their point of departure in the secretory cells of the kidneys, and that the various morbid changes of the organs are fully explained by the loss of cells, the presence of fatty and other deposits, etc., we do not reach the “fons et origo” of the disease.

The morbid conditions on which hangs the first link of the chain of appreciable alterations, is inappreciable.

Commensurate with our progress in the knowledge of structural changes, has been improvement in the means of determining their existence during life.

We have learned to investigate certain vital organs with wonderful accuracy.

The examination of the urine, chemically and microscopically, reveals morbid conditions of the kidneys.

Means of interrogating, in like manner, the liver and other of the abdominal viscera, will, in all probability, be found when the preceding changes and their pathological relations have been more fully studied.

He determines mischief already done. He has not often the opportunity, and, if he had, he is rarely able to foresee the occurrence of internal lesions.

Every clinical observer knows that affections involving irremediable lesions are developed imperceptibly, and are already developed when cases first come under the cognizance of the physician.

This is true of Bright's disease, cirrhosis of the liver, pulmonary tuberculosis, carcinoma in various situations, organic disease of heart, etc. Immensely important as it is to determine the existence of lesions and the amount of damage which they have occasioned, it would be of immense advantage to be able to go still farther and ascertain the existence of those morbid actions which precede and determine the development of structural changes.

Not to dwell too long on these considerations, let us inquire into their general bearings on therapeutical indications. What are the dictates of conservatism in view of the foregoing facts?

Suppose an important organ to be the seat of some structural change, and, so far as the organ is already damaged by the change, the affection to be irremediable. Nature, to a certain extent, has provided for such a state of things, by furnishing a surplus amount of structure in important organs.

The lungs are so far beyond the actual wants of the economy, that a loss equivalent to the functional capability of one whole lung is not incompatible with robust health.

The two kidneys exceed by at least the function of one of these organs, the necessities of the system. The heart may be considerably impaired, and still be sufficient for the circulation; and so with the liver, and, doubtless, the glandular organs contained in the stomach and intestines.

Medicus Naturae Minister Est
The Physician is the Servant of Nature

The physician should endeavour to aid nature in doing as well as possible under the damage which the affected organ has sustained.

How is this object to be attained? In general terms, by preventing, if possible, any farther progress of the structural change, and placing the organism in the best possible condition compatible with the existence of the lesion.

We may lay it down as a rule of general application, that an organic affection is less liable to progress, the functions of the affected organ suffer less, the system is less disturbed, and the local mischief is borne for a longer period, in proportion as, in all other respects, the body approximates to a state of health.

Striking results are often obtained in cases of an incurable malady, by effecting an improvement in the state of the system.

For example, it has occurred to me repeatedly to see patients enter hospitals with Bright's disease accompanied with such an amount of dropsy, prostration, etc., that the prospect of improvement seemed most unfavourable; but, after a time, the dropsy has disappeared, the strength has improved, and the patients have left the hospital feeling able to return to labour.

I do not now refer to cases of acute albuminuria, which may pursue this course and end in recovery, but to chronic cases of an incurable affection of the kidney.

The lesion continues in the cases referred to, the urine remains albuminous, and, sooner or later, grave consequences are developed.

Whence the marked improvement and apparent recovery? Simply because the system has been improved by rest, by nutritious food, by tonic remedies, and, probably, by an interruption of habits which have contributed greatly to the production of the local affection.

Similar examples might be cited of patients with other affections, such as cirrhosis of the liver, cardiac lesions, and pulmonary tuberculosis.

Structural changes generally commence and increase to a certain extent without giving any obvious manifestations of their existence; the system tolerates them, provided it has nothing else to bear.

But when other circumstances occur to disturb or weaken the economy, an affection, up to this time latent, declares itself.

If now the practitioner impute everything to the local affection, he will be much in error.

Let him succeed in restoring the system to the state in which it was prior to the manifestations of the affection, and the latter may again become comparatively innocuous.

Vomiting and purging, for example, in the course of Bright's disease, have a special meaning which the researches of Bernard and others have enabled us to understand. They show, in that connection, the conservatism of Nature, the object being to eliminate vicariously the urea which accumulates in the blood in consequence of its deficient excretion by the kidneys.

The conservative physician thus follows the guidance of nature when he endeavours to relieve the system of this excrementitious principle by remedies which act upon the gastro-intestinal mucous membrane; and he would violate conservatism were he to attempt to arrest these symptoms of disorder of the digestive organs.

By favouring the elimination of urea, in uraemia, either through the kidneys or the alimentary canal, we may prevent, for a time at least, inflammations, convulsions, and fatal coma; and by restraining the excretion of albumen with the urine, we may prevent the occurrence of dropsy.

On the Management of Diseases

Conservative medicine, as applied to hygiene. I refer to sanitary or hygienic measures, relating to air, temperature, diet, cleanliness, climate, moral influences, etc.

The subject of this essay embraces only considerations relating to therapeutics." - Austin Flint, MD, Professor of the Principles and Practice of Medicine, Bellevue Hospital Medical College, Long Island College Hospital, in "Conservative Medicine as applied to Therapeutics", The American Journal of Medical Sciences, 1863.

How to Prescribe Intelligently, Rapidly and Successfully

Let us bear in mind then, "it is not the agent, but the reaction of living cells to an agent, that must guide us in the selection of our therapeutics".

"The seeker after truth should know no "pathies" or "isms".

He must be absolutely free from prejudice in pursuit of that knowledge of remedies which will help him to heal the sick.

In our our materia medica we may not find a clearcut indication for the remedy we are studying, but in the work of another school of medicine we may find a definite indication for that remedy: so his position is unimpeachable, he selects the best of all the others, and more man certainly cannot do.

The "Osteopath" is wise, he says: "That is infectious or contagious, I'll have none of it, away with it.

The Hydropath is liable to run the entire gamut, he is a therapeutic nihilist and disregards drugs entirely, and so depends upon his favourite method, from the actual ice tubbing, to mere sponging with lukewarm water, cold sheet packings or the application of wet cloths or towels to become dry by the heat of the body, and repeated as often as the fever seems to require it.

And if a surgeon were called he no doubt would say "Cut it out".

But if all the above enumerated systems lose sight of the underlying principle, and treat by the rule of thumb, a perpetuation of traditional methods, then truly "Medicine is an art and not a science".

Is there then a scientific rationale in this as well as other diseases?

There certainly must be, for the patients have recovered under all of them, and they have died under most of them.

Sir Astley Cooper once said:

"Some patients get well with medicine, some without it but most of them in spite of it".

One thing certainly does stand out most prominently, the mortality statistics were lowered in almost exact ratio as drugs were withdrawn. The regular had the highest, the eclectic next, then came the homoeopath closely followed by the Hydropath, especially when the Brandt system was used. Osier (p. 209)

"Typhoid "Fever" states:

"We have learned slowly that typhoid fever is not a disease to be treated by drugs" (p. 213). Hydrotherapy: "In some form this enters practically into every form of treatment .... with this form of treatment the mortality is lower than from any other, but if used, it should be done from the onset and carried out systematically. Brand insisted upon the importance of this."

- Dr Albert C. Geyser, MD Professor of Physical Therapeutics, Fordham University, in "The Medical Times", 1911.

Team Relation Practitioner and Seeker

The Emunctologist sole responsibility does not work as a purveyor of Therapeutic Treatments for Chronic Disease reversal alone.

For, to be sure, a successful healing outcome, to be achieved, it requires a working partnership between the seeker of health, and the Clinically Trained Practitioner.

Chapter 29

The Role of Hydropathy in Emunctology

*"**As Galen said in the 7 of his Method, that he saw in one day, yea, in one hour, with a draught of cold water many diseases were healed**, and some of these were weak of stomach, not only, with cold water of a fountain but with water cooled in snow, and in Rome it is used." - Doctor Monardus, Phisition of Seville, in "The Boke Which Treateth of the Snow", 1574.*

"The history of Hydrotherapy forms the most interesting chapter of the history of medicine; it illustrates how prejudice may thwart progress and how enlightened physiology and pathology have tended to reinstate a valuable but neglected remedy. What remedies have survived since the days of Hippocrates and Galen? The application of diet and the use of water are really the only remedies which have withstood the test of time. A rapid glance over the history of hydrotherapy suffices to show that water is an orthodox remedy, having been first dilated upon in the works of Hippocrates, who correctly insisted that cold stimulates and warmth relaxes, and who applied it in many diseases with skill and judgement." - Dr Simon Baruch, MD in "The Principles and Practice of Hydrotherapy", 1908.

"Hydropathy, consists in an employment of water, both internally and externally, the extended use of a remedy familiar to every practitioner. Perhaps something may be learned from this system; but one is amused with its pretensions, which are to overturn all other methods of cure." - Dr. Symonds, MD in "The Lancet", Vol.39, 1842.

"Every medical man, with common intelligence in the healing art, knows that there is remedial virtue in the use of water, in such and similar cases; that a Good Physician must be, in a good degree, a Hydropath." - Dr Larkin Baker Coles, MD, in "Philosophy of Health Natural Principles of Health and Cure Or Health and Cure Without Drugs", 1851.

"Hydropathy, is natures own method for the eradication of disease, and that any other system, that has not these sublime ends in view, can have no pretensions to a radical cure, but only to the palliation of disease." - Dr John Goodman, MD in "Hydropathic Series", Vol.3, 1858.

"The main object of this form of treatment is the improvement of the capillary and lymph circulation and by these means aiding the removal of inflammatory exudates." - Dr Matthew Burrow Ray, MD, in "On Prescribing Physical Treatment", 1929.

"Dr Simon Baruch, MD - Of all remedial agents in use since the dawn of medicine, water is the only one that has survived all the vicissitudes of doctrinal changes because its rise or fall was always contemporaneous with the rise and fall of intelligence among medical men." - Dr Krusen, MD in "Physical Medicine", 1941.

Emunctology understands that each of the following Therapeutic Methods have their proper place in the specification of aiding the normal functioning of the Emunctories.

1. Hydropathy
2. Neuropathy (which includes Osteopathic Manipulation, and Chiropractic Adjustments)

Hydropathy as lay-down its Principles by Sebastian Kneipp and Neuropathy has lay-down its Principles by Dr Andrew Paxton Davis, MD, DO, DC.

"One established fact is said to be worth a thousand new theories. If the people can be thoroughly indoctrinated in the general principles of Hydropathy, they will not err much, in their home-application of the Water-Cure appliances to the common diseases of the day. If they can go a step further, and make themselves acquainted with the laws of life and health, they will well-nigh emancipate themselves from all need of doctors of any sort." - Russell Thacher Trall in "Hydropathy for the people", 1855.
"Hydrotherapy in all its many branches and forms. The physiologic effects of heat and cold constitute so vast a field that they ought to be known by the M.D., no matter what branch of medicine he takes up." - Dr Fenton B. Turck, MD, in , "Improvements in Medical Education", Journal of the American Medical Association, 26 May 1900.

"If the patient is to be saved it must be done by the restoration of the inhibitory quality by measures directed to the restoration of the whole bodily economy, hence the value of hydrotherapeutics, of nutrition, and above all, of sleep and the removal of exhausting influences." - Dr Louis Faugeres Bishop, MD in "JAMA", 1904.

"One young American doctor, Louis Faugeres Bishop, did not see why there should not be an American spa. He did not see why the "waters," the graded exercise and the dietary regimen so successful in Europe could not be adapted to home treatment over here. He went to Europe to see and to study." - in "The Contribution of Louis Faugeres Bishop", The American Journal of Cardiology, V. 24, Sep. 1969.

The Foundation of Hydropathy in Emunctology

The Ancient Sumerian word for 'Physician' is AZU, meaning 'One Who Knows Water'

Sumerian	English
Azu (or Asu)	Water (one who knows water; physician)
Azu (or Iazu)	Physician

The ancient Sumerian and Babylonian physicians were the ones who knew water!

Both, the Ancient Sumerian word, and the Ancient Babylonian word for, 'Physician,' are AZU and ASU respectively, meaning, 'One Who Knows Water.'

Swirling in lovely circles, their ancient word for 'Water' is also AZU.

> *"That medicine was old in Babylonia is shown... by the fact that the Babylonian word for Physician, Asu, derives from the Sumerian a-zu or ia'-zu, meaning "the man who knows water"." - Emily K. Teall, in "Medicine and Doctoring in Ancient Mesopotamia", 2014.*

The term "Hydropathy", has been cavilled at its etymological sense meaning "water-disease", whilst its conventional sense means "water-cure".

If disposed to dispute about terms, we might say that "physiology", in its etymological sense, means merely a discourse about nature; whilst in a conventional sense, we understand it to treat of the science of animal life.

For want of a better word, that of "Hydropathy" was adopted, to express the manner of curing disease, by cold and tepid general and local baths, wet sheets (sometimes called linen baths), dripping-sheets, douche and friction, air, exercise, and drinking water.

To this may be added, simplicity in our habits, and temperance in our manner of living.

In fact, by the term "Hydropathy," were intended all those appliances by which nature may be put in the best possible way of assisting herself, since no Allopathist, Homeopathist, or Hydropathist, will pretend that anything he can administer has of itself any healing virtue.

The weak man, do what you will, can only develop the strength which is in him, and the strong man the same.

Let, therefore, the reader judge which is best calculated to cause that development – Hydropathy or: drugs.

What does Hydropathic Treatment Effect?

It promotes the vital energies, quickens the action of the absorbent's, strengthens the nerves allays irritation, promotes healthy action of the vital organs.

The extreme vessels deposit healthy particles, which the absorbent's remove.

Dr. Gibbs, in his "Letters from Grafenberg", states that water, applied Hydropathically, acts in the following ways:

1. By the more rapid liberation of caloric.
2. By accelerating the change of tissues.
3. By constringing the capillaries.
4. By increasing nervous power.
5. By restoring tone to the skin,
6. By derivation.
7. By forwarding the elimination of morbific matter; or, in other words, as a sedative, alterative, tonic, stimulant, derivative, and counter-irritant.

And taken internally, it acts:

1. As a solvent, and contributes to the greater part of the transformations.
2. Gives tone to the stomach.
3. Promotes the secretions and excretions, particularly from the skin, bowels, and kidneys.
4. It is a most important and indispensable element in the blood; and "its partial application, acts by determining the force of oxygen from one part to another; it produces all the effects of bleeding and blistering - except the pain", says Dr. Johnson. And he might have added, the debility.

The Hydropathic Treatment causes the elimination, of all foreign matters from the body, and thereby promotes contraction, without which there can be no health, which Dr Billing has shewn to demonstration; he states:

> *"That the proximate cause of all disease is relaxation and enlargement of the capillaries: the indication of a cure, therefore, is to constringe the capillaries, and cause them to contract, and resume their healthy state. As all organic action is contraction all organic or animal strength depends upon the power of the different parts of the body to contract."*

If it be true, that the effect to be brought about in the treatment of all disease is to unload and constringe the capillaries, how can this be better achieved than by the sweating or wet-sheet process, and the cold bath; Dr. Edward Johnson says:

> *"The Hydropathic treatment, which unloads, the capillaries by sweating, and constringes them by cold, is clearly an efficient substitute for bleeding, purging, vomiting, uva ursi, digitalis, antimony, mercury, arsenic, nitrate of silver, sulphate of copper, iodine, iron, and multitudes of other remedies, enumerated by Dr. Billing, merely by their power of unloading and constringing the capillaries."*

Priessnitz's Principles:

1. That by the Hydropathic, treatment, the morbid matter is brought to, and discharged by the skin.
2. A new circulation is given to the diseased or inactive organs, and better fluid infused into them.
3. All the functions of the body are brought into a normal state, not by operating upon any particular function, but upon the whole.

If these are the results of Hydropathy, and that they are so, has never been disputed; nay, the truth is even proved by the following great medical authority unconnected with the water cure: **it must be admitted that the sooner drugs are dispensed with the better.**

Achieving a Cure by Water

"The water cure is a stomachic, since it invariably increases the appetite.

It is a local calefacient in the wet sheet covered by a dry one.

It is a derivative; cold friction at one part, by-exciting increased action there, producing corresponding diminution elsewhere; the compress frequently acting, if not like a blister, at least like a mustard poultice.

It is a local as well as a general counter-irritant.

It is essentially alterative in the continual removal of old matter: its renewal is shewn in the maintenance of the same weight.

An important Hydropathic principle is: that almost all its measures are applied to the surface.

One of the most formidable difficulties with which the ordinary physician has to contend is, that nearly all his remedies reach the point to which they are directed through one channel.

The only means of relieving certain diseases is by inundating the stomach and bowels with foreign and frequently to them pernicious substances.

Hydropathy employs a system of most extensive energetic general and local counter irritation.

A fifth physiological feature of Hydropathy is the number of coolings.

The generation of caloric has been traced to it right source.

It results from the burning up of waste matter, which by accumulation would become injurious.

It is singular enough that almost all arguments used against cold bathing are the strongest theoretical arguments in its favour.

Dr. Baynard, a most sarcastic writer, gives us the following anecdote:

> *"Here a demi-brained doctor of more note than nous asked, in the amazed agony of his half-understanding how "twas possible than an external application should affect the bowels, and cure pain within?*
> *"Why doctor" quoth an old woman standing by, "by the same reason that, being wet-shot or catching cold from without, should give you the gripes and pain within. If a rude exposure of the surface to cold and wet is capable of producing internal disease, there is no doubt that a close relation exists between these agents and the morbid conditions of internal parts."*

After devoting upwards of 30 pages to prove the value of Hydropathy, the reviewer sums up as follows:

> *"After what has been said and written in favour of Hydropathy. - Judgement must therefore be entered by default against its opponents and Hydropathy is entitled to the verdict of harmlessness, since cause has never been shown to the contrary." - R. T. Claridge, in "Every man his own doctor the cold-water, tepid water, and friction-cure", 1849.*

- in "British and Foreign Medical Review and Quarterly Journal", October, 1846.

Hydropathy

> *"**Hydropathy is the remedial use of water in any of its forms: ice, liquid or vapour, internally or externally. Of all remedial agents in use since the dawn of medicine, water is the one that has survived all the vicissitudes of doctrinal changes because its rise or fall was always contemporaneous with the rise and fall of intelligence among medical men, among the most eminent of whom in ancient and modern times we find its warmest advocates**, especially during the past decades, representing the most enlightened period of medicine." - Dr Simon Baruch, MD in "An Epitome of Hydrotherapy", 1920.*

Properties of Water

"The physical properties of water that render it capable of producing thermic and mechanical impressions upon the skin and mucous membrane that are varied and far-reaching in their effects are its power of absorbing and transmitting cold and heat, its solvent property and the facility with which its form can be changed by exposure to cold and heat.

Indications for Treatment

The conditions affecting persons who have mental diseases, that may be partly or wholly relieved by Hydropathy are:

1. Extreme Motor Activity,
2. Delirium,
3. Agitation,
4. Insomnia,
5. Cerebral Congestion,
6. Arterial Hypertension,
7. Vasomotor Paresis,
8. Gastric Disturbances: Anorexia, Hypochlorhydria and Hyperchlorhydria, Fermentations, Regurgitations, Pyrosis, Eructations, Emesis, Gastralgia, Ulcers, and Dilatation,
9. Intestinal Disorders: Increased or Diminished Secretions, Diarrhoea, Borborygmi, Increased or Decreased Peristalsis, constipation, Helminthiasis, Stasis of the Portal Vein, and Haemorrhoids,
10. Suppression, Retention or Incontinence of Urine,
11. Autointoxication,
12. Visceral Congestion,
13. Pain,
14. Faulty Metabolism,
15. Inanition.

The desired sedative, anodyne, hypnotic, eliminative or stimulating effects are obtained through hydriatric applications at hot, cold or neutral temperatures, hot and cold combined or alternated, and given with or without friction. So many interdependent physiological processes are involved when water is applied that it is almost impossible to obtain one of the good effects without, at the same time, obtaining one or more of the others. For instance, a sedative effect is sought and obtained from a properly administered cold wet sheet pack but it is accompanied by a tonic effect upon most of the muscles and blood vessels of the body.

Where hydrotherapy is highly valued and correctly used, it so permeates the whole hospital that it cannot be confined to any one particular place." - Dr Rebekah Wright, MD, Hydropath, Massachusetts Department of Mental Health in "Hydrotherapy in Psychiatric Hospitals", 1940.

The Rationale of the Action of Water in Health

"The application of water to the cutaneous surfaces is one of the most important branches of hydrotherapy.

Its effects are chiefly thermic and mechanical, and in this way they act as irritants to the peripheral sensory nerves.

This irritation is either conveyed to some portion of the central nervous system and then reflected to various parts which we desire to influence, or changes of the local innervation of the part which receives the application may be produced by the effect upon the ganglionic centers, which have been shown by Vulpian, Golz, and Heidenhain **to exist in the nerve supply of the vessels, and which perform the functions of nerve centers within their immediate sphere without depending upon reflex impulses from the brain or spinal cord.**

It is the thermic and mechanical action of water upon the circulation, respiration, temperature, tissue changes, and secretion which forms the basis of the therapeutic results accomplished by Hydrotherapy.

The effect of irritants upon the various functions have, been thoroughly established by experimentation upon animals and man by Golz (Tonus der Gefäße etc., in Virchow's Archiv. Bd. XVIV), and Roehrigt (Die Physiologie Der Haut: Experimentell Und Kritisch "The Physiology of the Skin: Experimental and Critical", 1876), Neumann, and others." - Dr Robert Ellsworth Peck, MD, Instructor in Neurology at Yale, New Haven, Connecticut, in "The Efficiency of Hydrotherapeutic Measures", Yale Medical Journal, April 1901.

"Robert Ellsworth Peck, Physician was born 8 November 1866, in New Haven, Conn. He was educated at the Sheffield Scientific School; at Yale University in 1890; in 1893 received the degree of MD from Yale Medical School; and did postgraduate work in New York Hospitals.

Since 1894 he has practiced in New Haven, and specializes in Nervous and Mental Diseases.

In 1894-1907 he was attending physician to New Haven Dispensary; in 1898-1907 chief of the Neurological Clinic of that dispensary.

Since 1894 he has been clinical assistant; and since 1898 instructor of neurology in the Yale Medical School.

He is also Physician-in-Charge of the Peck Sanatorium, at Woodmont, Conn.; and of the Elm City Private Hospital, at New Haven, Connecticut.

He is a member of the Connecticut State, New Haven County, New Haven and American Medical Associations." - in "The American Physician and Surgeon blue book; a distinct Clyclopedia",1919

Steps toward the Cure of Disease

"As a general rule, keep the stomach in right action, and the whole system will be right.

Although, as a very general rule, a rule with few exceptions, its maladies can be avoided by a knowledge of its peculiar functions and laws, yet it may possibly, by the strictest care, become deranged, and the whole system be put into liability to suffering.

Its lining membrane may become coated with a viscid mucous secretion, or its nervous tone may be temporarily prostrated, so that a healthy appetite may be gone, and the whole system brought under some form of fever.

If, on the approach of the disturbance, abstinence from ordinary food be rigidly adhered to for 1 day or 2, the stomach may free itself from its causes of oppression.

If, instead of resorting to emetics and cathartics, as is frequently done, the person affected would cease all ordinary eating, and live on mere Indian gruel, till the stomach could have time to clear itself from its mucous coating, or gather up its electric vigour, the whole difficulty might come to an end; a protracted sickness, severe drugging, a large bill, and perhaps a premature grave, might be avoided.

Whenever the stomach has lost its tone or become oppressed by wrong eating, the only cure that can suffice, consists in temporary abstinence from food.

Hundreds and thousands have sick headache, nervous headache, heartburn, sour stomach, and other ailments which are, if not caused, greatly enhanced by bolting down the food without stopping to masticate it; and the poor foolish sufferers will swallow quarts of pills, neutralizing salts, emetics, syrups, and a host of other things, in hope of cure.

When they will cease insulting their stomachs by their swinish eating, they will find that organ to regain its strength.

There are many diseases which originate in the existence of morbid matter in the stomach and bowels. In all cases of illness, the condition of these organs should be a matter of inquiry." - Dr Larkin Baker Coles, MD, in "Philosophy of Health: Natural Principles of Health and Cure: Or, Health and Cure Without Drugs", 1851.

Capillary Stasis

"Hot versus Cold Water: A hot water compress in all kinds of bruises is much more effectual than cold in preventing capillary stasis and consequent discolouration. It also relieves the pain better than cold." - in "The Medical Brief", Vol. 19, 1891.

The Rational versus the Regular Treatment

"Twenty years ago, Sir William Jenner, in an address before the Midland Medical Society of Birmingham, England, referring to the vicious effects of forced feeding, said:

> *"I have seen the patient restless, sleepless, his temperature raised several degrees above what it had previously been, vomit, eject a quantity of curd, and at once the restlessness cease, the temperature fall, the skin become moist, and the patient drop into a quiet sleep. All the threatening symptoms vanish with the ejection of the offending material. Or the undigested curds may accumulate in the bowel, inducing flatulent distention, pain, restlessness, and increased febrile disturbance. Under these circumstances I have seen an enema bring away a large vesselful of offensive, sour, undigested curds. Or, again, the undigested curds may themselves irritate the bowels, and produce, keep up, or greatly increase diarrhoea."*

Among the Hydrotherapeutic procedures besides the emergency cold bath and the cold, damp bandage, both of which have been described, I may mention the full cold-water (never very cold water) enema, as a "nutritive enema", which is very soothing and helpful at times; head pouring, a few pitcherfuls of cold water, the feelings of the patient being the guide as to temperature,

he lying on his belly, the head being held comfortably over a foot-bath tub or bowl, a most delightful treatment for certain head symptoms; the narrow cold compress along the spine, when indicated, to any soothing degree required; cold compress massage for the chilly symptoms often experienced when the temperature of the patient ranges very high, perhaps, while it seems hardly worth while to refer to the matter of sponge bathing, since the most ignorant attendant gives attention to this procedure.

A coarse linen towel, folded four-ply and wrung tightly from ice water, the whole trunk to be gone over piecemeal, warming up the towel once at each section.

In a case of appendicitis to which I was called, I found the patient with a hot fomentation over the region of the appendix, a hot-water bag over this, in his flannel under-shirt and nightgown, under a mountain of blankets, his teeth chattering with cold, as he imagined.

I had him strip off the under-shirt immediately, and I gave him the quick all over compress massage, and within 20 minutes he was delightfully warm in his nightgown and covered only with a single sheet, the time being summer.

The fomenting flannel had been immediately removed and the parts cooled in and in with the ice-cold compress.

I then placed the damp bandage about the lower body, and I left him a very happy fellow.

This gentleman had been subject to attacks every 3 or 4 months, for years, and had been upon the point of yielding to the advice of his family physician and the entreaties of his friends to have an operation for the removal of the appendix.

This attack, which was 3 years ago, was the last one he has ever had, though there has been an occasional uneasy feeling in the region of the appendix, perhaps 3 in the 3 years, which he has speedily knocked out in a single round with the cold compress.

His "education" cost him a matter of $10 dollars, for the only 2 visits I had occasion to make, and he has saved considerable money and possibly his life thereby.

The drinking water for the fever patient should never be very cold; better even warm than very cold. He will take much more cool water than ice water, and

it should be the aim of the attendant to saturate the system with water.

From, say, 80 ounces, in case of a patient rightly treated from the start, to a 130 ounces (Meigs in "The Uses of Water in Typhoid Fever") in cases that have been allowed to develop into ugly conditions, may be regarded as the proper "ration" for 24 hours. But this sort of thing costs the doctor a pot of money, a method that tends strongly to educate his families in prophylaxis and in the means of aborting attacks of illness; that is, by simple physiological treatment, as the damp bandage for the neck in amygdalitis or any sort of sore throat; for the upper body in certain chest troubles; for the lower body in abdominal disorders; the entire trunk in fevers; cold compress for the chest in pneumonia, and for the abdomen in "inflammation of the bowels" (peritonitis); in dysentery, the damp bandage again; and, in all acute attacks, the only physiological "diet" — viz., water, soft water, always "the best known diuretic" (W. Howship Dickenson, MD, FRCP, treatise on Albuminuria), the only proper diluent for the blood.

It seems incomprehensible that physicians should ever make soft water hard by adding lime, as is the not uncommon practice. To use soft water for washing dirty clothes, and it is 10,000 times more essential in our efforts to cleanse the filthy body. All diseases are appropriately enough called "filth diseases."

More than 2,000 years ago, Hippocrates, "the father of medicine," advised the withholding of food "during the progress of fever," and in every generation from his day to ours this has been the sheet anchor of the wisest dietists in the treatment of acute disorders characterized by high temperature. The great novelist, Balzac, in a private letter to a very dear friend describes an illness that came upon him.

He says:

> *"I have been very ill. The doctor called it coagulation of the blood, which might affect the brain. M. Nacquest condemned me to a bath of 3 hours each day, and to drink 1.5 litre of water every day, and to take no other nourishment. At the end of 2 weeks I came out of this barbarous but heroic treatment with a clear skin, renewed strength, and with fresh courage for new struggles."*

According to my observation during many years of study of physicians, and constant reading of all the leading medical journals, there is a lamentable lack of interest among medical men concerning all such studies as are embraced in this paper.

The reason of this is not far to seek: the medical schools give their graduates almost nothing in the way of teaching in Hydrotherapy, and it is the almost universal practice with their professors and the hospital physicians to feed early and often, as if the question of digestion and assimilation were not at the bottom of all true feeding, and not simply swallowing.

In the discussion following the reading of an essay on Hydrotherapy, Its Scientific Basis, by Professor Putnam, of Harvard University, recently, Dr. Coggeshall insisted that:

> *"It is disgraceful that students should be allowed to graduate from our medical colleges with practically no systematic teaching in regard to non-medicinal therapeutics."*

And Dr. Rogers remarked jocosely that:

> *"Medical colleges ought to cease to graduate men who don't know the difference between a Scotch douche and a hot Scotch."*

Kussmaul writes:

> *"Of Hydrotherapy the young physician knows almost nothing [nor does one in the hundred of old ones know or practise very much]."*

Here is a great gap in the education of our physicians; here is the real cause of his inability to cope with the empirics for the favour of the public."

Professor Credé, of Leipsic, states that "if physicians were better versed in these branches, the field of operation of many quacks would be greatly curtailed", which is only another way of saying that many quacks are more efficient in practice than the average regular practitioner, an admission as true as it is shameful.

It seems almost beyond belief that any physician could be found, at a time so close to the 20th century, who would deny a typhoid-fever patient all the water he craved; but in fact such an occurrence is not altogether rare.

Water is withheld in great measure upon the theory that large amounts of fluid interfere with the digestion of other and more nutritious food; but, as Henry has so tritely remarked, under certain conditions there is no other food that can truly nourish the body.

During the progress and at the height of typhoid fever, "the blood is of a dark, blackish-red colour, and is generally obtained by needle puncture of the finger with more than ordinary difficulty", indicating conclusively a deficiency of water.

On the other hand, the thickly coated tongue, sordes, and the generally parched condition of the mouth indicate quite as clearly the utter lack of all the dissolving and preserving juices absolutely essential to the digestion of solid food, or any other food but water.

To call milk a liquid food seems to me absurd, when it is stated on high authority that the casein of a pint of milk is equal to a good-sized mutton chop, and is vastly more difficult of digestion; yet we know that as much as 2 or 3 quarts of milk are swallowed by a typhoid patient in 24 hours.

The results of this abuse of food have been vividly portrayed by the late Dr. Jenner, as above quoted.

The fasting typhoid patient will shortly have no movements of the bowels, there is a normal closure, so to say, under these conditions.

After convalescence is fully established, the condition of the stomach such as to make the digestion of food possible, and the patient hungry enough to take a half slice of stale Graham bread for "pie" and pronounce it delicious, this will be a good risk."

Two or 3 times a day, after a day or two, he may have a moderate portion of such bread and a few stewed prunes; but the bread is to be chewed by itself, not run down with sauce, or any other fluid but saliva. After a few days of feeding the bowels will get in condition for a natural movement, and should never be moved with physic, though occasion may occur in which an enema of a cupful of cold water may be of use in stimulating the action of the lower bowel; but this "only in case of the presence of waste matters difficult to expel otherwise. It is a lamentable fact that we rarely find an individual in the profession who is at all in love with the study of hygiene, personal sanitation, and natural methods of treatment. The great proportion regard hygiene about as honeybees do the nectar of Epipactis latifolia, they won't touch it! But, on the other hand, the wasps are very fond of this nectar, as many empirics are fond of hygiene.

The empiric to be shunned is, in my estimation, the medical man who hears of any important addition to the means for alleviating human suffering and fails to try with all possible energy to become familiar with its principles and technique to employ it in his practice. Though armed with a dozen parchments, such a man is unfit for his calling.

Dr. Austin Flint, in his posthumous address on The Medicine of the Future, prepared for the meeting of the British Medical Association in 1886, wrote:

> *"The medical profession will have reached an ideal position when the physician, guided by his knowledge of diagnosis, the natural history of disease, and existing therapeutic resources, may, with neither self-distrust nor the distrust of others, treat an acute disease by hygienic measures without potent medication. When this time comes a system of practice which assumes to substitute medical dynamics for the vis medicatric natura will have been added to the list of bygone medical delusions."*

Hygienic, or physiological, treatment, embraces every natural and helpful measure calculated to assist the diseased organism to recover that just balance which we call health:

1. Hydrotherapy, with its many potent procedures, a few of which have already been described;
2. Osteopathy, which is of immense value in a wide range of disorders, as we all well know;
3. Diet, meaning the ingestion of food when indicated, and its avoidance when contraindicated;
4. Air (of much better quality than is found in the average sick room, to be sure) for the lungs and for air baths;
5. Sun baths;
6. Rest, when indicated, and exercise for those who are overrested, so to say, etc.

Whenever, as a profession, we shall have reached the height of capacity for skillfully applying all these potent remedies for acute or chronic diseases, it will no longer be sneeringly said that "medicine and science are not even on speaking terms," for medicine will then have been exalted to a science." - Dr Charles E. Page, MD in "Typhoid Fever: A Study in Hygienic, or Physiological, Treatment including Physiological Diet", New York Medical Journal, Vol.71, 1900.

Treatment for Scarlet-Fever

"Dr. N. Wiest, in the Denver Medical Times, presents his treatment of scar let fever as follows: Give plenty of water, all the patient wants, and much more if he is not inclined to drink much.

See that the system is thoroughly flushed with good, pure water.

Keep the mouth, fauces and throat as clean as possible.

These are a prolific source of infection, and if properly attended to will vastly lessen ear and other complications which are so troublesome and fatal." - in "The Medical Summary", 1906.

Poisons

"There are thousands of substances other than those usually classified as poisons that are capable of causing death when taken into the human system.

Many of the adulterated foods and incompatible mixtures of food we eat daily create large quantities of toxins or poisonous extracts.

These eventually manifest themselves in sudden or early death through the medium of fever diseases." - Dr Simon Louis Katzoff, MD, in "Timely Truths on Human Health", 1921.

The Necessity of Using Lavements

"My attention, having been directed for a number of years to the various mechanical, as well as scientific, means, requisite to exercise the healing art, and particularly to those more especially necessary to the preservation of the healthy functions of the stomach and bowels, as well as their restoration from disease.

The results at which his experience has enabled me to arrive, in relation to these important subjects.

To preserve the action of the stomach and bowels, is to resist, in the most effectual manner, the inroads of nearly all diseases.

Whilst the offices of these organs are duly performed, health may be said to be enjoyed; and the foundation of all other enjoyments, of all undertakings, and the happy prosecution of all our pursuits, laid on the surest basis.

It is to these organs also that our means of cure are applied; and on them are intended primarily and mainly to act, in the removal of almost every disease to which the human frame is liable. Surely, therefore, the best mode of exhibiting our remedies, so as to act efficiently upon those organs, and at the same time without injuring, but on the contrary promoting, their healthy functions, must be matters of the first importance.

I shall attempt to direct the attention of my reader to the necessity of using lavements, as, with the proper apparatus, and a sufficient quantity of warm water (blood warm), say from one to two quarts, we possess not only the means of softening the detained faeces, but by the power possessed by these instruments, we are enabled to excite gently the muscular fibre of the gut, by which its energy is restored, and the power of expulsion again brought into action.

This state of the bowels, although not constituting the entire cause of indigestion, is by far the most frequent, and most to be dreaded, and may generally be as certained by the following symptoms: confined state of the bowels, difficulty of breathing, hardened state of the abdomen, flatulence, nausea, headache, fever, fetid breath, etc.

The following observations are from the pen of the celebrated Dr. Baillie:

"Injections (enemas) do not appear in this country so highly appreciated as they deserve, although on the Continent their advantages are extensively acknowledged, and they constitute no trifling part of the practice of medical men. It is remarkable that they are not in more general use, when we reflect how numerous are the complaints produced by a confined state of the bowels, and how quickly they are relieved by a removal of that cause. The occasional employment of injections (enemas) is certainly the most convenient and comfortable way of obviating so frequent a source of misery and pain; and as injections neither produce temporary constitutional disarrangement, nor render the habit so accustomed to their use that they may not be at any time discontinued, the same objections cannot be urged against their

employment which are so often made to other remedies; whilst the simplicity of their formation, and the facility with which they can at all times be had recourse to, are arguments in favour of their adoption. In a medical sense, they are invaluable: during the attack of inflammatory disorders, and various other complaints to which the bowels are subject, when the stomach rejects medicines of every kind, and when all other remedies prove quite ineffectual, how often do we find a common injection of the most simple kind produce the most salutary results; and by unloading the lower bowels, by clearing a passage for flatulent collections, and by acting as a kind of internal fomentation to the whole disordered canal, suspend the most distressing irritation, and produce tranquillity and rest. In a domestic point of view, they are not much less important: and I speak with confidence when I state, that in all the cases of haemorrhoids or piles, in which I have been consulted, and of fistula, for which it has been necessary to operate for their cure, I scarcely remember one which could not be ascribed to a long and habitual neglect of the bowels."

By the Injection of Warm Water merely, Much Good is to be done as respects regulating the bowels of those persons who are disposed to costiveness; and I can with confidence affirm, that if this plan is commenced in the incipient state of this and other disorders, and persevered in daily, gradually increasing the quantity of the fluid, it will, in 19 cases out of 20, completely succeed.

If, from the colour of the evacuations, or any other symptom, it shall be discovered that the cause of the disease is in the stomach or small intestines, and the stomach shall be found too weak or irritable to receive aperient or other medicines, such medicines, in stronger doses, will have the same effect, to a certain degree, if given in **warm water by way of Enema**, as when taken into the stomach; which effect is produced chiefly by means of the absorbents mentioned before, as proved by many actual experiments." - Dr Edward Jukes, Sourgeon, in "On indigestion and Costiveness", 1831.

"Use of Colon Lavage has never been in question in certain acute and emergency conditions. Employed as a definite Therapeutic Measure in the treatment of disease, its greatest field of usefulness lies in that broad group of low-grade chronic infections variously spoken of as chronic Intestinal Toxemia, Chronic Focal Infection, Autointoxication, Sluggish Liver, Etc. Its use in these conditions is for the purpose of promoting Tubular and Cellular Drainage, the Healing of Diseased Tissues, the Restoration of Normal Colon Function, the improvement of both Capillary and Lymphatic Circulation, and of Liver Function. The Principle back of Free Drainage is that Infection Tends to Disappear when Drainage is Adequate, and in the absence of a feeder." *- Dr James W. Wiltsie, AB, MD in "Chronic Intestinal Toxemia and Its Treatment", 1938.*

Hydrotherapy

"The rational employment of water, is of the greatest aid in the treatment of digestive disorders. It is used both internally and externally.

When taken internally, in sufficient quantities, pure water performs the following functions:

1. It promotes intestinal peristalsis and softens the faeces
2. It thins the bile and prevents stagnation
3. It flushes the kidneys and increases skin secretion

Far too little water is drunk by many patients.

The principles of external Hydrotherapy are simple and should be understood by every doctor.

They may be summed up in the following:

1. Hot water Soothes.
2. Cold water Stimulates.

The Application of Moist Heat is of recognized value in Acute Painful Spasms; and a Full Hot Bath has been known to cut short many a Colic.

A Warm Tub Bath is a splendid sedative for general Restlessness, and Insomnia.

The stimulating effect of Cool or Cold Water is utilized in the Treatment of Asthenic Conditions.

For a general invigorating effect cool rubs, affusions, showers and douches are available.

Nervous Excitability and Insomnia

It often happens that even in well-built and well-nourished individuals one meets with a constant restlessness and excitement, a continuous hypcractivity of both mind and body that gives rise not only to various digestive complaints but interferes greatly with all effective effort by day and particularly with sleep at night.

Insomnia is indeed oft-times the out standing disability.

The Remedy Par Excellence, however, is: Hydrotherapy.

Hydrotherapy in the Treatment of Ptosis and The Asthenic State

For the general toning up of the asthenic individual - increasing his appetite, enhancing his weight, improving his peripheral circulation, restoring his ambition and energy, and promoting his general sense of well-being - physical exercise can

be very advantageously combined with tonic hydrotherapy.

The latter treatment can be carried out at home almost as well as in special Hydrotherapeutic institutions.

The basis of the tonic treatment is the application of water at increasingly cooler temperatures to the body surface. It is well-known that when ever cold water is applied to the skin, the body tends to respond by a characteristic "reaction".

This reaction consists in the contraction of the cutaneous blood vessels, in increased cardiac action, in deepened respiration, and in heightened activity of the voluntary muscles. By gradually increasing the stimulus (i.e., diminishing the temperature of the water), the patient can be put through a systematic course of autonomic and neurovascular training.

In the actual practice of tonic hydrotherapy the following practical considerations should be borne in mind: The temperature of the water, the duration of the treatment, and the accompanying pressure (or amount of friction) should always be clearly and definitely indicated." - Dr John Leonard Kantor, MD in "The Treatment of the Common Disorders of Digestion", 1929.

Paralysis Treatment of Infantile

"**The author emphasizes the Necessity of Thoroughly Cleaning Out the Alimentary Canal at the very inception of this disease.**

He has seen a case in which the Affection was Effectually Controlled by a Complete Evacuation at the first intimation of sickness.

In this patient, Copious Enemata forced high up and repeated several times were resorted to. Although the child's Life was Threatened for a week, it then recovered, with paralysis limited to the muscles of the thenar eminence of one hand. These patients are apt to show obstinate Constipation, perhaps from interference with the spinal centers controlling defecation." - Dr H. J. Bogardus, MD in "Journal of the Medical Society of New Jersey", February 1912.

The Use of the Enema in Insanity

"Dr M. Craig's in the British Medical Journal: "The blood pressure is invariably low in acute mania, while high in melancholia. The lower pressure in mania is responsible for the restlessness which is a constant symptom in this condition.

This restlessness was found to be relieved by the employment of an Enema of 200ml to 300ml of water.

The patient's condition steadily improves when the Enema is retained.

This is a very important indication for this hydriatic procedure.

The warm or neutral bath ought to be as useful in relieving the high pressure of melancholia as is the enema in relieving the low pressure of mania.

The temperature of the bath should be 34°C to 36°C, the duration from 30 to 60 minutes." - in "The Alienist and Neurologist", 1901.

Hydrotherapy in the Treatment of Nervous and Mental Diseases

"In advocating a more general use of hydrotherapy in diseases of the nervous system and in insanity, I wish to forestall criticism by saying that I do not do so to the exclusion of other means of treatment, for we possess adjuncts of great importance in massage, Swedish gymnastics, passive and active machine movements, and dietetics, all of which are also deserving of much wider attention than is usually given to them.

Many of the scientific principles of hydrotherapy have already been established.

The "water treatment" certainly has many features which appeal strongly to our sense of rational treatment, for are we not able thereby to affect very markedly the local innervation, to dilate and contract vessels, alter the circulation in a part, change the distribution of the blood of the whole body, retard or accelerate the blood-current, weaken or strengthen the cardiac contractions, vary the amounts of secretion and excretion, increase heat radiation?

And who can calculate to what degree we may thus influence the biochemical processes of the body, the metabolism of tissues, the carrying off of degenerated and toxic substances? or determine how much we may affect the vascular neuroses, the local anaemias and hyperaemias of the brain and spinal cord? We do wrong, therefore, not to properly investigate this agent.

In continental Europe the "water cure" has become of late a scientific remedy, one recognized as of great value, and everywhere — in asylums and hospitals, at health resorts, and in the cities — at the command of all physicians in private practice, are excellent means of making use of hydrotherapy where it is indicated.

I will here enter into details as to hydrotherapeutic measures only in so far as mental and nervous diseases are concerned; their manifold application in a great variety of general diseases, such as fevers, disorders of the stomach and intestinal tract, affections of the respiratory and circulatory organs, and the like, has become fairly well known in America, particularly through the work of Dr. Simon Baruch, of New York.

In my tour of inspection of asylums for the insane in Germany, Holland, France, Belgium, Italy, and Austria, in the winter of 1886–1887," I was surprised to find how universally hydrotherapy was employed in the treatment of certain conditions in insanity, and with what excellent results; and in a visit to the new insane asylum at Athens, Greece, in 1892, I was astonished to note how well equipped a hydrotherapeutic establishment it possessed, although situated in a country we are disposed to consider somewhat out of the track of modern progress.

On my return to America, in 1887, I put into practice, as well as means would permit, at the Hudson River State Hospital for the Insane, some of the principles of hydrotherapy that I had acquired abroad, but, as the facilities were quite inadequate, my hydrotherapeutic measures were limited to applications of warm

and cold baths, brief or prolonged, the wet pack, wet compresses, and ice-bags.

Nevertheless, I learned from observation and experiment how much could be accomplished in the treatment of insomnia, congestive conditions, states of mental excitement, restlessness, and the like, by even such simple measures, and understood how much more might be done were each asylum provided with means for the methodical, systematic, and scientific employment of the water treatment.

As it is, I do not know of any asylum in America that is supplied with anything beyond the ordinary baths for purposes of cleanliness, and one of the objects of this article is to stimulate a more general consideration of the value of hydrotherapy by asylum authorities, with the hope that it may lead to installations of the necessary apparatus in most of these institutions in our land.

With reference to general nervous diseases, I am sure there is a tendency everywhere among neurologists to look with more and more complacency upon this means of treatment as one of great value.

I know that this is true in all parts of Germany, Austria, and France, in some conversations with Professor Winternitz, who, as is well known, occupies a special chair of Hydrotherapy in the University of Vienna, I learned that in his practice of over 30 years, fully 75% of his patients were sufferers from nervous disorders, and his remarkable success in relieving and curing bad cases is everywhere attested.

I had the pleasure of visiting his large establishment for Hydrotherapy, at Kaltenleutgeben, near Vienna, and of examining his methods and the apparatus he employs there.

I am aware that among my neurological colleagues in New York, also, there is a growing disposition to make greater use of Hydrotherapeutic, and Mechanical Treatment in Nervous Diseases.

General Effects

The following are the ordinary effects to be borne in mind in the application of **Hydrotherapy to Disorders of the Mind, and Nervous System:**

Cold and Warm Baths affect the central nervous system in a reflex manner by stimulating the sensory nerves of the skin and the vasomotor nerves, and thus influencing the cerebral circulation.

Cold excites and warmth diminishes irritability when thus applied.

Cold Baths

Short cold baths, especially when combined with sprinkling, showering, or rubbing, are powerfully stimulating, exhilarating, and tonic.

A cold bath stimulates various reflexes in the body, such as peristalsis and the visceral reflexes in the sacral portion of the spinal cord.

Cold applications to the skin stimulate vaso-dilator nerves, dilate the peripheral vessels, and increase blood-pressure.

Warm applications also dilate superficial capillaries, but by diminishing the tone of the vessel walls they also reduce arterial tension.

Warm Baths

Prolonged warm baths, steam and hot-air baths, and the hot pack, are relaxing, fatiguing, and soporific. **Warm Baths, by soothing peripheral nerve irritability, exert a calmative influence over the central nervous system.**

They mitigate Reflex Spasm and contractions in voluntary or involuntary muscle.

To lower the irritability of individual nerves or of the entire nervous system, prolonged warm baths or the hot pack are indicated.

As many Hydrotherapeutic Measures tend to reduce temperature, it is important to remember that in non-febrile cases, in anaemic conditions, and in debilitated states, the temperature must be raised artificially before subjecting patients to Hydriatric Treatment.

In some cases the temperature of the body on rising from bed in the morning is sufficient; in others a short stay in the hot-box may be needed.

Applications in Conditions Among the Insane

Bathed frequently every day.

A simple hydriatric chamber.

The walls require protection by means of a rubber lining, or, better, tiles or marble, and the floor should be zinc-lined, tiled, cemented, or made of asphalt. Several rain-baths should be installed. There should be one stationary bath-tub.

There should be several kinds of douches, connected with the hot and cold water pipes, and to this douche-apparatus should be attached a gauge for measuring the pressure.

In summer the hydrant water is never cool enough for some purposes, and a small reservoir should be arranged (coils packed in ice) for obtaining cold water when required.

A hot-air box is very useful.

The equipment is complete when to these are added 1 or 2 foot-baths, a sitz-bath, several cooling-caps or ice-caps, Chapman's ice-bags, and a liberal supply of linen for wet-packing, dry-packing, wet compresses, and bandages.

The room should be capable of being heated when in use to a temperature that will feel agreeable to the bather when undressed.

It is need less to say that patients should not be treated in a cold bath-room.

Indications and Methods

For tonic and refreshing effects.

A cold rain-bath (10° to 21°), the patient rubbing himself while in the bath. Duration 5 to 10 seconds; or the half-bath in a tub at 18° to 24° C., 10 to 30 minutes. By "half bath" is meant only 6 to 8 inches of water in the tub, in which the patient lies and splashes about and is rubbed by an attendant.

The object in both is to get the exhilarating and stimulating effects of the cold, and also the mechanical effect of the water impinging upon the skin. Such a bath should be taken every morning.

For powerful tonic, revulsive, and derivative effects.

The cold douche increases reflex excitability, and causes hyperaesthesia of the skin. It is a powerful stimulus, mental and physical. By means of various nozzles it may be ejected in the form of a jet, a spray, a shower, a fan, and

by alternating with hot and cold water we have what is known as the Scotch douche. Such procedures are indicated in lethargic and hysterical forms of insanity, where there is sluggishness of the intellect, apathy, stupor, catalepsy, etc., and in melancholic cases, and in all cases where there is anaemia, chlorosis, or gastric disorders.

To produce sleep. The prolonged warm whole bath is indicated. Temperature 21°-32°. Duration, one-half to 2 hours. When of long duration the patient may be suspended in a hammock made of a sheet.

Indicated in cases of melancholia with excitement and in some maniacal conditions. As a general hypnotic agent, however, applicable to all forms of insomnia among the insane, the hot wet pack stands foremost.

It is applied in this way: A blanket 2.5 by 2.5 metre is spread upon the patient's bed, and upon this a sheet wrung out dry after dipping in hot water is laid.

The patient lies down upon this, and the sheet is at once evenly arranged about and pressed around the whole body with the exception of the head, after which the blanket is also immediately like wise closely adjusted to every part of the patient's body.

Other dry blankets may now be added as seems necessary.

The patient remains in this an hour or longer; all night if asleep.

Maniacal excitement

In this condition we all know how important it is to control motor excitement as much as possible in order to prevent the metabolic waste that progresses only too rapidly in many cases, often leading to death from exhaustion in a few days. It is astonishing to note the good effects of hydrotherapy in many cases of this kind.

The measures to be carried out are those indicated for insomnia.

It is not often that patients laboring under great excitement can be placed in the warm bath, but the wet pack is applicable in nearly every case. It not only diminishes the erethism, but often brings about refreshing sleep, and always when kept applied prevents metabolic waste by motor excitement.

I know of nothing that gives one better results in such cases than the wet pack in conjunction with overfeeding and occasional doses of hyoscyamine or duboisine if needed.

Application of Hydrotherapy in Nervous Diseases

Special indications in various nervous disorders.

Anaesthesia (cutaneous)

Short cold jet and fan douches of strong pressure to the anaesthetic areas. Temperature, 10° to 21° C. Duration one minute. Daily.

Angio-paralytic hyperidrosis of the feet

Prolonged cold foot-bath with chafing, or fan douche of cold water to the feet. Temperature, 16° C.

Duration 20 minutes for bath, 5 minutes for douche.

Chorea

Cold plunge beginning at 32° C, daily reducing until 21° C is reached.

If anaemic, spinal spray, jet or fan douches, at first warm until patient becomes accustomed to them, then gradually reduced to 16° or 10° (Duval).

Epilepsy

Cold shower baths and cold sponge baths daily are beneficial.

The shower baths should be rain-like in character - that is, not too forcible.

In many cases a morning and evening bath (the "half-bath") proves very serviceable.

The "half-bath" is taken in a bath-tub only half filled with water, and when taken should be accompanied by energetic rubbing of the patient by an attendant.

This bath lasts 5 minutes, and the temperature should not be under 10° C and not over 21° C.

Where there is evidence of hyperaemia and increased blood-pressure in the head, the cold cap is useful. While these are the general indications for hydrotherapy, certain measures are often of use at the time of seizures.

During a fit or during a status epilepticus it will be observed that there is one of two vascular conditions present: either the face is pale and there are signs of brain anaemia, and in this case warm wet compresses should be applied to the head and genitals, accompanied by friction of the trunk upward, the body being placed with head low and arms uplifted; or there is turgescence of vessels in the head, the face is red, the carotids beat strongly, and under such conditions a contrary procedure is indicated - cold compresses to the head, neck, and genitals, strong wet beating of the feet, with a high position of the head. Daily applications for 30 seconds.

Spinal Cord Affections

In various chronic diseases of the spinal cord the daily half-bath, 18° to 28° C, 6 to 10 minutes duration, with affusion and chafing, will be found useful.

In some cases of compression and injury to the cord, in myelitis, and the like, where there is paralysis of the rectum and bladder and formation of bedsores or trophic lesions, resort may be had with advantage to the permanent bath (Riess).

A sheet fastened in a bath-tub makes a hammock in which the patient lies at first for 1 hour or so daily, later all the time, except at night, when he is put to bed.

The water is kept at a temperature agreeable to the patient (31° C).

Spinal Irritation

"Douche filiforme" as a rubefacient and epispastic along the spinal column; or rain-baths, 18° to 29° C, and douches.

Spermatorrhoea

Cold sitz-baths, 5 to 20 minutes, 10° to 21° C, daily at bedtime; contra-indicated in sexual irritability and active pollutions, where prolonged warm or hot sitz-baths at 32° to 37° C should be used." - Dr Frederick Peterson, M.D., Chief of Clinic, Nervous Department, Vanderbilt Clinic, College of Physicians and Surgeons, Attending Physician New York Hospital for Nervous and Epileptic, in "The American Journal of the Medical Sciences", Vol. 105, 1893.

Hydrotherapy in Diseases of the Nervous System

"It is the writer's desire to enter anew a plea for the more frequent, the more intelligent, and the more scientific use of water in the treatment of disease.

Even in the vestibule of our art water had its place, and long prior to the days of Galen and Hippocrates, according to Chinese archives, a physician of that country prescribed for one of his patients affusions of ice-water.

Hippocrates employed water intelligently in the treatment of ulcers, fevers, hemorrhages, and other conditions. Asclepiades, the friend and physician of Cicero, was its warm advocate, and Celsus, the physician both of Ovid and Fabius Maximus, emphasized the importance of friction and exercise, in connection with baths.

No little perfection was attained in its use by the Romans, as attested by the ruins of various magnificent baths, which are said to show a remarkable perfection of detail in their equipment.

For 800 years the cold bath has been in use among Japanese physicians.

To our German confrères we doubtless owe more than to any others for the scientific elaboration of the therapeutic uses of water.

Though much enthusiasm for its use was aroused by Priessnitz, who, in 1840, is said to have treated some 1,600 patients from all parts of the world, yet to Winternitz, Brand, Strasser, and others we are under obligations for work which has put hydrotherapy on a rational and scientific basis.

To Winternitz belongs the honour of having established the first hydriatic clinic, and hydrotherapy finds a place in the curriculum of some of the German universities.

Dr. Benjamin Rush, in the USA, used cold water in the treatment of rheumatism, gout and other diseases, and in 1794 recommended broken ice in a bladder to be applied to the head in fevers, certainly an early use of the ice-bag.

While sundry articles have during the century just past appeared from the pens of American authors, we know that on the part of the profession generally at least, ''innocuous desuetude'' has rather been the portion of water as a remedy scientifically applied to morbid states.

The most elementary considerations (on the physical side) on which rests the application of water to the body are, of course, its great power for absorbing and giving up heat and the great readiness with which it can be applied to body surfaces.

Its great capacity for heat makes it a potent means of influencing surface temperatures, and the possibilities of thus inducing important physical changes leads us to more complex anatomic and physio logic considerations.

It is, of course, largely through the skin that desired effects are produced, and we, too, seldom appreciate how complex an organ the skin is.

The statement that there are 10,000 square feet of capillaries in the skin seems rather startling, yet is well established, and makes us the more readily comprehend its possible importance as a means of heat regulation.

Muscular and elastic fibres play a most important rôle in producing tension or relaxation of the skin, and this in turn profoundly affects the enormous mesh of blood-vessels here found. So great are the contractile powers of the skin and so much are the blood-vessels directly affected thereby that one writer has spoken of the cutaneous vessels as constituting a great “skin heart.”

Coupled with the statement that the cutaneous vessels may contain fully 1/3 of the entire volume of blood, these considerations become highly significant as to

the opportunities here present for profoundly affecting the organism through the skin.

Nerves, medullated and non-medullated, are here in abundance, sensory, motor and vasomotor, and a veritable network under lies the true skin.

Through the skin as an organ of sense, irritants like heat and cold have their primal effects, and most of the bodily functions are in close relations with the cutaneous nerve endings.

Not unimportant is the excretory function of the skin, but its most important office is as a heat regulator, and it is through this function that profound effects are accomplished through the various uses of water.

Direct effects are produced through the well-known physical laws that, generally speaking, cold contracts and heat expands. Thus smooth muscular fibre contracts under cold and expands under heat, but contractility is destroyed or paralysed by an excess of either.

Cold improves muscular tone of vessels and increases tension.

Heat relaxes, causes loss of tone.

Hyperemia thus results from both, but one is tonic, as the result of reaction, and the other atonic, as the result of relaxation.

The calibre of blood-vessels is thus directly affected, and even their contents, for cold increases the number of blood-cells and hemoglobin, while in the absence of reaction both the erythrocytes and leucocytes are diminished.

Thus the skin is a most sensitive guard, zealously protecting the bodily temperature, and so the normal functions, not only through vascular tension, and so the distribution of blood, but even affecting more or less profoundly the state of the blood itself. The inference is easy that the various secretions and excretions will necessarily be altered secondarily to these various changes in vascular tension. Both direct and indirect effects are secured from application to the skin.

Muscular action may be reflexly stimulated from the reflex areas (intra-scapular, epigastric, abdominal, cremasteric and plan tar), and it is wise to remember that certain other skin areas are in close reflex relation with the internal viscera, e.g., the neck and the heart, the hands and the cerebral vessels, the feet and the uterus. Important reflex effects are thus possible.

What is Hydropathy

I conceive it to be any application of water to promote the elimination of morbific agents and assist nature's forces.

The ice-bag, and the high enema, I take to be quite as much hydrotherapeutic measures as the application of the douche or other form of bath.

It seems an unjustifiably narrow view to regard hydriatic measures as properly confined to the various kinds of bath.

Experiments have pretty well established the wide range of possibilities from the application of this potent remedy.

Its largest measure of effect is due to its application to the body surface, and

here both thermic and mechanical effects are largely involved. Both heat and cold are irritants to the sensory nerves, which pervade the skin in such numbers, and on this fact depend possible results.

Circulation, respiration, temperature, tissue change, and secretions may all be thus profoundly affected.

Reflex effects, are most important and are secured through the action of weak irritants in stimulating the nervous supply of blood-vessels and of intense irritants in paralyzing their action. Such irritants may produce marked slowing of the heart, with increase of its force.

Cold enemata produce a moderate dilatation of cerebral vessels. Reaction is important, and often the secondary effects of the application of water to cutaneous areas are quite the reverse of those primarily obtained.

Baths simply applied act more by hydrostatic effects, douches reaching limited areas doubtless owe more to reflex effects.

The application of cold primarily in creases blood-pressure, and even when reaction has established a peripheral dilatation in place of the primary contraction there produced, vessel tone is not lost.

Not more than 2 minutes after entering a cold bath was required until the blood-cells were largely increased in number, though this diminished later on. Warm or hot baths produce an increase of the relative quantity of acid phosphate in the blood. Hot and cold applications likewise affect the lymph-flow, both because of changes in other organs and alteration in the calibre of lymph-vessels.

A warm bath or compress will increase the absorption of lymph, and if followed by cold would imply the vessels into the general circulation.

Both hot and cold promptly affect the respiration. On the muscles the effects are interesting; indeed, cold baths re moving the effects of fatigue.

The elimination of urea, uric acid, and other urinary constituents may be thus promoted. That temperature may be promptly affected, the Brand baths in typhoid fever have made widely known.

This truth is, however, often lost sight of, that the colder the bath the less active is its power of reducing internal temperature.

Let it be said, however, that reduction of temperature is by no means the most important possibility of hydro therapy. Nerve and vascular reaction are most important sequels of hydriatic procedures and reactive capacities differ. I have briefly cited some of the profound bodily changes which applications of water to cutaneous surfaces promptly produce.

Surely, any remedy which can thus affect the organism is capable of being made a measure for much good. It is at hand for all to use, and in several ways it can be efficiently used. It has, too, superior advantages to any drug at our command.

I do plead for the more general recognition of simple measures and the more thoughtful study of the effect of water as applied to morbid conditions.

Too much of tradition, and too little of thought cluster about our use of this agent.

From my references to some of the effects of hydriatic applications, it is obvious

that water may be made a promoter of elimination, a stimulant to all the vegetative processes. Properly applied, it is a powerful tonic. It may be an excitant, but it is also most beautifully efficacious as the finest sedative at our command.

To the neurologist, then, water appeals as a happy means of solution of some of his difficult problems. The neuroses and phychoses afford a field for hydriatic measures which have here given the most satisfactory results.

Neurasthenia, neuralgia, hysteria, insomnia, general paresis, states of excitement and depression, have all yielded to the happy influences of water properly applied.

While, water under pressure and of stated temperature, easy of regulation, such as can be found in a suitably equipped hydriatic institute, where the Scotch and various other douches can be given, is of distinct advantage, this is by no means a Sine Qua Non for excellent work with this potent agent.

The full bath, the half-bath, ablutions, affusions, the drip sheet, the hot and cold packs, demand no expensive apparatus or equipment for their efficient use, even where no special conveniences are at hand, nor is their technique so difficult that even patients in poor surroundings need be deprived of their advantages.

Those neurasthenics of the sluggish, de pressed type, so often the bane of a physician's life, not infrequently yield to properly applied treatment.

All the functions are sluggish, and there is defective nutrition of nerve centres.

Vigorous reaction seems a thing unknown. Such cases cannot all, of course, be put through the same paces; the needs of each must be carefully studied, but, in general, nutrition must be increased and reaction secured. They shudder at the thought of a cold bath, and may need careful coddling before much effective work can be done.

A dry rub in the morning in timid cases, later followed by brisk rub bing with a wash-cloth wrung out of water at 24C, may educate a timid patient up to more vigorous procedure. Or wrapped in a dry pack for 1 hour and with open windows, and drinking iced water at intervals, this continued to the point of free perspiration, the patient may then have the limbs, arms and trunks successively exposed and bathed with water gradually reduced from 24° to 15° C.

Friction with a bath-mit or coarse towelling will assist in establishing a healthy reaction.

The wet pack, later to be followed by the half-bath, will, if well borne, help to establish still more vigorous reaction.

Later still the hip-bath, commenced at 32° and reduced to 27° for 5 to 8 minutes, will prove an effective aid. The hip-bath is possible without other apparatus than a wash tub, and should be accompanied by vigorous friction and may be followed by affusions, gradually reduced from 24° to 15°C.

Douches, sprays or showers are useful in these conditions, and the Russian bath, followed by a salt rub and shower bath, has proved an efficient aid to treatment in institutions suitably equipped.

I desire to emphasize, the fact that much can be done for these patients with the aid of intelligent cooperation and in the absence of expensive apparatus.

The salt rub could be given prior to the affusions, which may follow the half-bath, and this is a very helpful measure in establishing a healthful reaction.

With neurasthenics of the excitable type the way must be felt very cautiously, as they may balk at a bath temperature to which the phlegmatic will more readily submit. For them the half-bath begun at 35° C for 10 minutes may have to be reduced very gradually, and only to 29° C.

A persistence in the course determined on, guided, of course, by intelligent observation, is the price of the benefit to be obtained. General treatment is better, as a rule, than local measures.

The wet pack at 15° to 21° C. followed by the half-bath at 27° C for 5 minutes, is extremely helpful to a sluggish circulation, and this measure also accomplishes much in these cases in which insomnia is complained of.

Experiments have amply proven its sedative effects on the cerebral circulation, and its power for promoting those conditions of the pial vessels most conducive to sleep.

Warm full baths are, as is well known, a most happy sedative in many conditions. With children I have many times rendered a better service by a hot bath than the contents of my medicine-case could possibly afford.

This bath, however, must be used with due regard to surrounding temperature, lest so great reaction be induced as to counteract the desired effects of the bath.

The Neptune girdle is a helpful measure, which may be applied with little or no disturbance to the patient who declines the bath or more extensive measures, and consists of linen wrung out of water at 15° to 21° C and covering the lower trunk, this to be overlaid with dry flannel.

Contrary to the time-worn tradition, it is perfectly safe for the patient, after his morning bath, to take his walk in the open air, as soon as reaction is well established.

In hysteria, a treatment similar to that adopted in neurasthenic cases will prove effective. Here the spinal douche and wet pack are of special service.

Obviously, in the neuralgias, all nutritional and tonic measures are commendable, and dry packs and hot fomentations have, in cases of sciatica and other neuralgias, accomplished much when medicinal measures had availed nothing. In some cases local measures have seemed to accomplish most, and in inter costal, cervical and brachial neuralgias much has been claimed for the Scotch (alternate hot and cold) douche (which, of course, is as yet too seldom available).

Baruch, who, in the USA, has done much for Hydrotherapy, claims to have accomplished "striking results in many neuroses, especially Graves disease, chorea, obstinate headaches, paresthesias of various types, the traumatic and occupation neuroses."

No practitioner today would willingly be deprived of the immense advantages of Hydrotherapy in the handling of his cases, and any psychiatric institution abreast of the times is adopting some form or other of Hydrotherapeutic equipment (if it be no more than substituting the more cleanly and efficient shower for the old time tub-bath).

The general practitioner frequently sees mild and even severe types of acute depression in which early institution of appropriate hydriatic measures will afford prompt relief.

Cases of acute excitement, too, afford opportunities for putting into efficient practice the dry pack, the hot or cold pack. Such patients are often denied the sedation which an efficiently given hot bath might afford.

A patient with coated or dry tongue, injected conjunctivae, fetid breath, accompanied with great motor excitement, may have much done by a high enema, a cold pack, intelligently given.

Cases of this kind are not wanting which have shown prompt abatement of excitement and passed off into most restful sleep.

I recall cases in my own practice in which excitement was most promptly allayed, and one case in particular comes to my mind which was on the "ragged edge" of most acute excitement, and which so improved under the use of the cold packs which I directed her to have that she was saved the necessity of an asylum commitment. Surely, the rational use of water is vastly superior practice to the too frequent drugging of the patient with nauseous doses of bromides and chloral or other misused sedative.

If I have seemed too elementary, too trite, or too prolix in thus presenting the advantages of water in the treatment of neural and psychic cases, my own apology is the very practical advantage of such methods, which are too frequently scorned by the general practitioner, who is wont, like the priest and the Levite of Scripture, to "pass by on the other side."

Discussion

Dr B. F. Beebe, of Cincinnati, Ohio, said if we were honest about it we would acknowledge that we are a little dis honest in our failure to practice these simple measures. We know toxic substances are removed by water, and why don't we use water more frequently Is it because it is so familiar: There is no real excuse for not using it more.

The essayist applies the treatment to the nervous system, but it is of value in all the systems. We should use water not only by the mouth, but also per rectum. Thirst means that the many cells of the body desire water.

Whenever there is an excess of toxic material in the system there is thirst.

Dr. G. W. McCaskey, of Fort Wayne, Indiana, said many cases may be benefited by the scientific use of Hydrotherapy. It can be used in the homes of the poor. Elaborate methods are not always necessary. In sanitariums or in connection with our offices we may set apart rooms and have them fitted up for this treatment.

Hydrotherapy is of value through its action upon the vasomotor and other nerves. In these cases we must watch the heart. Occasionally cases will not tolerate even mild therapeutic measures." - Dr Charles Hitchcock, MD, in "The Lancet-Clinic", 1904.

Hydrotherapy in Nervous Diseases

"**Dr. Charles W. Hitchcock, MD, described the effects of Hydriatic applications, and showed that water might be made a promoter of elimination and a stimulant to all the vegetative processes.**

Properly applied, it was a powerful tonic.

It might be an excitant, but it was also the finest sedative at our command.

The author presented the practical advantages of the use of water in the treatment of neural and psychical cases." - The Medical News, 1904.

"Hydropathy in Nervous Diseases. - In many nervous affections disturbances of function are due to some obscure lesion or fault of nutrition, which can be removed or amended by judicious Hydrotherapy". - Dr John Vietch Shoemaker, AM, MD, in "A Practical Treatise on Materia Medica and Therapeutics", V.1, 1893.

Hydriatric Procedures as an Adjunct in the Treatment of Insanity

"Ernst Brand was the first to recognize and teach that the true rationale of the cold bath was the shock and subsequent stimulus to the periphery, which was conveyed to the central nervous system, and thence reflected upon all the functions dependent upon it.

His name is too intimately associated with the prophylactic effect of the cold bath in typhoid fever to need further comment. It would, however, be an injustice not to accord to Dr. Baruch the credit he so highly deserves for the development of hydrotherapy in the USA.

I am personally indebted to him for the privilege accorded me and my staff in permitting us to visit his institution and study his methods.

For several years past the bath-tub has given place to the rain bath, or spray douche bath, which is at present used exclusively throughout the institution.

Were I asked to discuss the merits of the tub as against those of the rain bath for institution use, I would unhesitatingly state that the rain bath economizes space, hot and cold water, a larger number of patients can be cleansed in less time, fewer attendants are required, more thorough cleanliness is attainable, the danger of contagion is minimized and the struggle between the patient and the attendants over the tub abolished, and lastly.

The lavatories in the wards are each provided with a gauge on the bathing apparatus, whereby the temperature and pressure of the water can be regulated at will, so that it is possible to administer with a considerable degree of accuracy the Scotch douche, jet douche, rain and needle bath. In order to arrive at some definite conclusion as to the value of water as a therapeutic agent in the treatment of insanity, we have for several years made careful observations on patients receiving treatment with the warm and cold full baths, warm and cold packs, Sitz baths, ice

packs, Scotch douches, needle baths and drip sheet baths in conjunction with the hot air cabinet.

The hot air cabinet in our hands has proven to be a valuable agent in relieving pain without the depressant effects common to hypnotics and sedatives. It stimulates metabolism, promotes absorption, and is unquestionably the most valuable eliminative agent we possess, and when properly used, possesses a sedative action on the nervous system obtained by no other remedy.

In connection with this subject, I am sure it would not be out of place to say that through the able advocacy of ex-Commissioner in Lunacy, Goodwin Brown, the rain baths were introduced into the public hospitals of the State of New York in the year 1891 and I believe are now universally in use and in high favour.

Mr. Brown was instrumental in having an act passed (Chapter 473, Laws 1892) permitting the establishment of public baths in cities, and in having a second act passed (Chapter 351, Laws 1895) making it mandatory that all cities of the first and second class erect free baths.

In adopting Hydriatric measures, the exact physiologic and pathologic conditions present must be recognized and so influenced as to bring about the best results. Patients differ widely in their behaviour under treatment and for this reason every case requires careful physiologic study to determine the best course to pursue.

All authorities insist upon a careful technique, and by this alone can the best results be obtained. In many instances harm will result when a prescription is indifferently carried out.

Clinical Histories of Three Cases

Case 1 - L. H., age 18; assigned causes; remote, environment; exciting, anaemia. Duration of present attack, 3 weeks; diagnosis, melancholia acuta agitata.Until 2 years previously the patient had always enjoyed excellent health, and was of a sanguine temperament. From the age of 12 she had been constantly employed in a candy factory, and usually in a room in which the temperature was very high.

For the past 2 years, the mother had noticed that her daughter had been failing physically, and that during this time she had menstruated only once or twice.

One month before admission the patient, who had always been bright and vivacious, became morose, suspicious, irritable, and suffered from insomnia.

A few days prior to coming to the hospital, she had developed well marked delusions of fear and persecution, with auditory and visual hallucinations. She became so frenzied and agitated that she could not be cared for at home.

On admission to the ward, the patient was in a most agitated and disturbed condition, constantly pulling at her hair and at tempting to strike herself against the stretcher, moaning and crying in a most pitiful manner; she had active and painful auditory and visual hallucinations, with delusions of fear.

Physical examination of the patient showed a poorly nourished, anaemic girl; rectal temperature 98.3°F; pulse 130, respiration 21, very shallow. Skin cold and

clammy. Mucous membranes almost bloodless. Heart sounds feeble; anaemic murmurs heard over the vessels. Sordes (brownish encrustations) on teeth and lips, tongue badly coated, breath foul, marked cutaneous hyperaesthesia, which appeared to be general.

She was put to bed and given a large simple enema at a temperature of 37°C. The stomach was irrigated with sterilized water at a temperature of 42° C., and a small quantity of peptonized beef juice administered through the stomach tube, as patient refused nourishment.

She continued in a most agitated condition, and at 18:00 became wildly excited, constantly removing her clothing, pulling at her hair, jumping out of bed, and screaming at the top of her voice that she was being burned up, etc.

She was ordered a warm wet pack, the sheets being saturated with water at a temperature of 44°C., and covered over snugly with several woollen blankets; an ice-cap was applied to the head and a hot-water bottle to the feet.

In about 1 hour, the skin became active and patient commenced to take considerable quantities of water voluntarily.

She gradually became quiet, and at the expiration of 3 hours she was removed from the pack, given an alcohol bath followed by light massage.

She continued quiet and slept well during the night.

In the morning she again became very much excited and the pack was again applied for 3 hours, the patient offering less resistance to its application than before, and soon falling asleep.

Warm packs were continued during the first week of patient's stay in the hospital, being employed about twice in 24 hours for 3 hours at a time.

The patient's sleep became much better, the large quantities of water taken during the application of the pack promoting diuresis and a free movement of the bowels.

The toxic manifestations gradually disappeared, and the motor and mental symptoms also subsided.

At the end of the first week, the auditory and visual hallucinations had vanished; the cutaneous disturbances were less marked, and the warm packs were discontinued on account of her improved condition.

She was placed on the following treatment:

A hot-air bath at a temperature of 82°C. was given for 10 minutes daily, with an ice cap to the head, in order to produce hyperaemia of the superficial blood vessels; at the expiration of this time, she was immediately taken from the hot-air cabinet and given a needle bath at a temperature of 16° C. at 15 lbs. pressure for one minute. This was followed by light massage.

At the end of the first week of this treatment, she commenced to show marked improvement; the skin became more active, the furuncles disappearing; the sleep became quiet and restful, and the hallucinations subsided. The appetite was very much improved. She was transferred to the convalescent ward, from which she was discharged as recovered, having gained 13kg.

Case 2 - K. B., age 20; Assigned causes, remote, family trouble; exciting, childbirth. Duration of attack, 3 months. The patient had always enjoyed excellent health until the time of her confinement, three months prior to her admission to the hospital. The labour was very tedious and difficult. Soon after the birth of her child, she became depressed and irritable, and refused to recognize her baby, relatives or friends. She soon became very suspicious and refused to take nourishment, saying that her food was poisoned, lying in bed in a most list less manner, apparently manifesting no interest in her condition or surroundings. She gradually became worse and finally was so helpless that it became necessary to remove her to the hospital.

On admission, the patient was very dull, depressed and refused to speak. If persistently questioned, she would make a feeble effort to speak, but apparently was too confused to collect herself sufficiently to answer questions. The tongue was coated, the breath foul; there were sordes on the teeth; the skin was cold and inactive, the body was fairly well nourished; anaemia not pronounced; heart and lungs normal.

Pelvic organs normal, with the exception of some slight enlargement of the uterus; general cutaneous anaesthesia present. She refused food. The stomach was irrigated and nourishment administered from a feeding-cup. Sleep apparently excessive.

The patient after being put to bed remained in a stuporous and semi-cataleptic condition, apparently sleeping the greater part of the time, and it was with difficulty that she could be aroused sufficiently to take nourishment from a feeding-cup.

On the second day after her admission to the hospital, she was placed on the following treatment:

Hot air bath at a temperature of 82°C. for 10 minutes, after which the jet douche was applied at a temperature of 10°C., at a pressure of 25lbs. for 1 minute. This was followed by light massage and continued daily. During the first week, the patient showed no apparent mental improvement.

There was, however, an improvement in her general circulation; the skin became more active and the secretions of the body increased.

During the second week, she became less stuporous and manifested some mental improvement and more motor activity, at times offering some slight resistance to the jet douche. At the end of the third week, the Scotch douche at a temperature of no° to 15° C., for 2 minutes at a pressure of 25 lbs., was substituted for the jet douche. The patient continued to show mental and physical improvement. The Scotch douche was continued daily for 3 weeks, and her mental and physical condition continued to improve. She was discharged, as recovered.

Diagnosis, acute melancholia with stupor. Patient gained about 30 lbs. in weight, and no special medication was used in this case.

Case 3 - R. B., age 30; assigned causes; remote, environment; exciting, lactation; duration of attack, prior to admission, 1 week. Diagnosis; mania acuta (acute mania) with delirium. The patient had always been strong and healthy; one year previously she had been confined and since that time had been nursing her child, at the same time performing her household duties, and in addition assisting him in his business as a tailor.

Three days prior to her removal from her home she commenced to act strangely, shouted and screamed at the top of her voice in a most incoherent manner, and nothing of an intelligent nature could be obtained from her. She assaulted all who came near her and was especially resentful toward her children. She became so violent that it was necessary to call in the police and have her removed.

The patient was received into the hospital on a stretcher; she was under the influence of a powerful sedative; the pupils were widely dilated; there were sordes on the teeth and lips; the tongue was coated and other evidences of intestinal toxemia were noted. The vessels of the ocular conjunctivae were intensely congested; the pupils reacted very slowly to light and accommodation.

The patellar reflexes were exaggerated and considerable cutaneous hyperaesthesia was present.

Examination of the lungs showed a subacute bronchitis of the left lung; the skin was hot, dry and inactive; the body was fairly well nourished and covered with large contusions and bruises. The patient was constantly throwing her arms and limbs about in a restless manner and rolling her head from side to side. She was placed in bed, given a large simple enema at a temperature of 37°C., and later received a small amount of peptonized beef juice through the stomach tube.

The stomach was irrigated with sterilized water at a temperature of 14C., and found to contain only a small amount of foul-smelling mucus, mixed with detritus. Soon after the patient's stomach had been irrigated, she became very maniacal and showed evidences of grave delirium; most active auditory hallucinations were present; the temperature was 39°; the pulse-rate 120, respirations 20.

She was placed in a Sitz bath at a temperature of 38°C., gradually increased to 44°; the ice cap and cold bandages were applied to the head and neck.

Local massage was used about the pelvis and abdomen while the patient was in the bath. She remained in the Sitz bath about 20 minutes and during this time drank a considerable quantity of water. The evidences of cerebral congestion became less marked. The patient was removed from the bath and was considerably quieter, although she still remained in a delirious condition.

Six hours later she again became very noisy, violent and most difficult to control. She was placed in a hot full bath, temperature 38°, gradually increased to 44°C.

At the end of 1 hour her pulse became soft and rapid, and as she showed evidences of exhaustion, she was removed from the hath, given a stimulant and placed in a number of warm woollen blankets in order to continue the perspiration.

She remained in the dry pack for about 2 hours, after which she became quiet and slept soundly for several hours; the bowels and kidneys acted freely.

On the morning of the second day after admission to the hospital she again became very noisy and maniacal, but the delirium was not so marked. The hot full bath was again repeated at a temperature of 38°, gradually increased to 44° C. After remaining in the bath for 1 hour, she became quiet.

These full baths were continued for 3 days, the patient receiving on an average four baths in 24 hours. On the morning of 6 April, the third day after her admission to the hospital, the patient was very much quieter and her delirium had subsided, although her hallucinations of hearing continued active.

On 7 April, she developed several abscesses in the right axilla and arm. These were opened and irrigated, but on account of her disturbed condition dressings could not be kept in place.

The abscesses were irrigated twice daily. Her maniacal symptoms continued until April 20. During this time, she received a hot full bath daily at bed-time which kept her fairly quiet during the night and day. Her secretions gradually increased in quantity, the bowels became regular and the skin active; all the toxic symptoms subsiding on the second day after her admission to the hospital.

By April 24, all of her mental symptoms had disappeared and she was transferred to the convalescent ward. She gained about 20 pounds in weight; was discharged June 2 as recovered and in a most excellent condition physically and mentally.

The Application of Water as a Therapeutic Agent

The results I have obtained have been most gratifying and confirm those of many prominent authorities on this subject, and those obtained in other hospitals.

I find that when water is properly applied in the form of packs and hot and warm full baths, it acts as a hypnotic and sedative, and is of great value when it is imprudent to administer drugs. As an eliminative it is of exceptional value.

I find that after a few baths have been administered, there is invariably an increase in the quantity of urine and a marked increase in its solid constituents; that the large quantities of water the patient takes, during the period spent in the packs and the hot full baths, promote free diuresis and assist in diaphoresis; that the application of water for its tonic effect in the form of sprays, douches, etc., under hydrostatic pressure, induces glandular action by its tonic effect on the general cutaneous circulation.

Furthermore, I believe that the assimilation of iron and other alteratives is promoted by these tonic baths.

I know of no condition, except advanced pregnancy, pleurisy or when the patient is practically moribund, in which some form of hydrotherapy cannot safely be administered.

Of course we must recognize the fact that there is some risk of serious

exhaustion in the warm packs and in the warm and hot full baths, but who is skilled in the application of these baths can easily detect the danger signals and remove the patient before any serious consequences have resulted.

I have yet to meet with a fatal or serious result, although, in this hospital, thousands of packs and baths have been given. Of course we meet with more or less opposition on the part of the patient to the administration of these baths.

I find, however, that it is seldom, if the patient be properly handled, that the baths cannot be given. If the patient is resisting and suspicious, she is allowed to see the other patients receive their treatment, and in her own case the first procedures are made as mild as possible.

The most resisting and suspicious patient, after she has received 1 or 2 treatments, usually submits quietly and apparently enjoys them.

It is my custom to have the baths administered between the hours of 10:30 and 12:00, and between 15:30 and 17:30, since the stomach is comparatively free from food at these times.

In conclusion let me urge that more attention and consideration be accorded the therapeutic use of water in the hospitals under our charge.

I know of no other place where the principles upon which its action is based can be better studied, as we have every opportunity for its systematic, persistent and scientific application." - Emmet C. Dent, Superintendent Manhattan State Hospital, West, Ward's Island, New York City, in "The American Journal of Insanity", Vol.59, 1902.

Hydropathy in the Treatment of Mental Diseases

"So much remains to be done to secure for Hydropathy the eminent place which it deserves in the treatment of disease.

Its increasing importance has led the University of Heidelberg to provide in its annual appropriations for a course of lectures on hydrotherapeutics.

Other universities have included this branch in the course on general medicine.

Baths of various forms have long held a place in the treatment of mental as well as general diseases, and the physiological action of water applied in various ways and at different temperatures has been studied.

Experiments have shown that various tissues of the body react differently toward water of different degrees of temperature.

Connective tissue contracts under the influence of cold water and expands when hot water is applied. Elastic tissue reacts in a reverse manner.

Experiments made with the aesthesiometer have proved that hot water will increase and cold water diminish the excitability of the cutaneous nerve endings. Besides these local effects we have the reflex effects produced upon the vasomotor centers.

Moderate chilling will cause contractions of the smaller vessels, while moderately hot water will cause their dilatation.

That we have to deal with reflex phenomena is further proven by the fact that the contraction of the capillaries, smaller veins and arteries is not confined to the region to which cold is applied, but is observed throughout the vascular system.

If, for example, after a sphygmograph is applied to the radial artery at the wrist and a normal tracing taken cold be applied to some remote part of the body, a second tracing will record a marked contraction of the radial vessel.

The eflects of water are produced chiefly through the physio logical action of heat and cold upon the peripheral nervous system, and in a reflex way upon vasomotor and trophic centers.

While both these effects must more or less overlap each other, and can in practice scarcely be separated, it is well to keep this physiological distinction in mind.

Cold applications cause a contraction of the blood-vessels followed by dilatation. There is usually increased tissue metamorphosis, increased secretion of urine, and an increase in the excretion of carbon-dioxide. In a non-febrile patient there is slight abstraction of heat, but the heat centers are stimulated so that the total result is an increase of body heat.

A sense of exhilaration and increased muscular power follows the cold bath, providing the bath be not too cold or too prolonged. The determination of time and temperature will vary with different people. Some sensitive and feeble patients can never be made to react.

> *"Cold baths systematically taken furnish a kind of vaso-motor gymnastics. The neuro-mechanism controlling the blood-vessels becomes more supple, and the tendency to local congestion of the viscera and mucous membranes is prevented." - Dr. Dana*

Warm baths increase the circulation in the skin by at once dilating peripheral vessels, withdraw blood from the central organs, increase nitrogenous metabolism and the exhalation of carbon-dioxide. Pulse and respiration are increased, nervous excitement is lessened and the general effect is to cause sedation and a feeling of languor. There are limitations, how ever, to the usefulness of the hot bath. Persistence in hot bathing on account of the marked sudation causes weakness, loss of flesh, rapid heart action, nervousness and insomnia and defeats the end for which it was sought. Heat applied over certain sympathetic ganglia causes a contraction of the arteries in that region controlled by the centers over which the application was made.

Hyperemic headaches and nasal hemorrhages are relieved by the hot-water bag applied over the cervical and upper dorsal vertebrae.

The pulmonary circulation is similarly affected by applications to the dorsal region, and the abdominal and pelvic organs by heat to the dorso-lumbar sympathetic. Cold in like manner applied causes dilatation of deep seated vessels.

The Chief Methods of Application

Dr Forbes Winslow makes the rather sweeping statement in regard to the Byzantine Bath that: "It may be considered in fact to be a complete materia medica in itself." While we might restrict this statement somewhat, the Byzantine Bath is without doubt an agent of great value in the treatment of mental diseases.

The two-fold functions of the skin—secretion and absorption-are stimulated in a marked degree. The open pores permit of the absorption of a greater amount of oxygen, and the profuse perspiration relieves the circulation of the products of metabolism. Its eliminative effect makes it very useful in toxic insanities.

Proceeding upon the theory of the increased toxicity of the excretions just preceding an epileptic seizure, the Byzantine Bath has been used extensively and satisfactorily in epilepsy with a view to eliminating the toxines by way of the skin.

Its general use is recommended, and particularly whenever prodromal symptoms manifest themselves. Alcoholics derive great benefit from it, also cases of melancholia with dry, hot skin. Some cases of excitement are much relieved, but care should be exercised in their selection. In excitement accompanied by profound nervous and vascular depression the Byzantine Bath is contraindicated. While a state of quietude might be obtained it would be at the expense of depleted nerve centers and an exhausted heart muscle.

Demented and melancholic patients with subnormal temperature and vaso-paretic symptoms are benefited to some extent by a course of Byzantine Baths.

Vasomotor tone is in a degree restored, temperature becomes normal and the pulse stronger. There is a primary loss of weight, but this is followed by increased appetite with an ultimate gain in flesh.

The slight headache and sensation of fullness that sometimes accompanies the Byzantine Bath can be for the most part avoided by placing the feet in hot water and applying an ice bag or cold towel to the head. On account of the increased force of the heart's contraction and the increased arterial tension, care must be observed in subjecting to the Byzantine Bath a patient with an enfeebled heart muscle or degenerated vessels.

Russian baths are in most respects similar in their effect. The Byzantine Bath favours the highest degree of perspiration, while the vapour of the Russian bath retards it somewhat. The Russian bath is less depressing and depleting than the Byzantine Bath and can be applied in cases in which the powers of resistance are more reduced. In our practice, the Russian bath, supplemented with the salt rub, has in a large measure supplanted the Byzantine Bath.

The technique of the bath varies necessarily according to the condition of the patient. Ordinarily the patient enters the steam room at a temperature of about 38C degrees. Here he remains from 10 to 20 minutes, during which time the temperature is raised to 43C or one 46C.

A tepid shower bath is then taken, followed by a soap shampoo. The soap is removed by an other shower bath, when the whole cutaneous surface is briskly rubbed with fine salt thoroughly moistened.

The room is once more filled with steam until the perspiration starts, when the patient is again placed in the shower bath, the temperature of which is gradually reduced to 15C, 10C and even 5C degrees and continued until the patient is thoroughly cooled. He is

then taken to the massage table, where an alcohol or cocoa butter rub or massage, with or without general faradization (low electrical current and vibration), may be given. This bath leaves an equalized circulation, a tranquil state of the nervous system, the skin smooth, absolutely free from the products of excretion and with a warmth and glow that can be obtained in no other way.

Upon the thoroughness of the cooling process depend many of the good effects of the bath.

If but imperfectly cooled, the face is flushed and there is a sensation of fullness and discomfort in the head. On general principles this bath is applicable to the great majority of cases, but is especially beneficial to those recommended for the Byzantine Bath, and can be given with greater safety in conditions of more profound nervous and vascular depression; to neurasthenics, hysterical patients, in fact, all except extreme cases, such as advanced paretic dementia, excitement with great prostration and feeble melancholics.

The Many Advantages to be Derived from the Various Other Hydrotherapeutic Measures

Douches, showers and sprays are tonic and stimulant, and, according to the force of impingement, may have a counter irritant effect or exercise upon the tissues a decided species of massage.

The Scotch or alternate hot and cold douche is decidedly stimulating and useful in spinal hyperesthesia and disturbances of cutaneous sensation, the hot Sitz bath for the relief of pelvic pain and inflammation, suppressed menstruation and dysmenorrhoea. With the sedative effect of the warm pack and tepid tub bath you are all familiar.

Cold applications to the head in cases of excitement, due to congestion or inflammation of the meninges, are of the greatest benefit and may be continued during twelve out of the 24 hours to the advantage and increased comfort of the patient. Numerous other methods of applying hot and cold water will suggest themselves to us.

With its wide range of temperature variation, with the ability to regulate the force of its impingement upon the surface, in its potent power to influence the peripheral blood-vessels and nerve terminations, in its reflex effects upon brain, cord and viscera, in its eliminative power and in its capacity to increase assimilation and change perverted nutrition, we may expect of hydrotherapy far-reaching and permanent results when systematically applied." - Dr Roland Niles, MD in "The American Journal of Insanity", Vol.55, 1899.

Enemata

"In persons past the meridian of life, and especially in persons of sedentary habits, what may be called simple faecal retention is a very frequent form of constipation.

In such persons this form of constipation is relatively very frequent, both as compared with other varieties of constipation, and also as compared with the same form of constipation at other times of life, and in individuals of other habits. In such persons coprostasis, (that good old name for faecal stagnation,) is especially apt to produce complete intestinal obstruction.

It is in these cases, especially, that life may he saved by enemata. I do not know of any form of intestinal obstruction in which enemata can do harm.

In most cases they take a chief place amongst our most potent means of doing good.

In many cases which at first are unpromising, and even when the predisposing cause of the obstruction is some organic and incurable disease, we may repeatedly relieve a threatening faecal accumulation, and long keep off a fatal faecal stagnation, by the due use of enemata.

It is, perhaps, not too much to say that enemata far surpass any other remedies in curative value in the simple coprostasis of advanced life.

When we use an enema, for the purpose of clearing the bowel of faeces and flatus, the quantity of the injection, if the liquid used be a suitable one, is its chief quality.

As to enemata, I am accustomed to tell my pupils of this well-tried clinical rule of mine, namely, that when they give an enema they should always ask themselves whether it is to he retained or returned: if it he designed that the injection shall he retained, as in the case of a nutrient or sedative enema, its quantity can scarcely he too small; if, on the other hand, it is intended to move the bowels to the expulsion of their contents, the quantity of an enema can scarcely he too large.

> *"The quantity of an aperient injection (a laxative, which has the effect of gently moving the bowels in constipation) is precisely as much of it as can be passed into the bowel. For such an enema to be as large as possible, is only to be large enough." — British Medical Journal, 17 Nov. 1883.*

Experience in practice has taught me to add here an important caution. What, in a particular case, may appear to he simple constipation may he really impeded faecal passage through a cancerous stricture of the lower bowel. Especially is this caution necessary when the patient is at or beyond the middle age.

I have heard Professor John Chiene FRSE, of Edinburgh, say, in advice to young practitioners, "Gentlemen, never lose an opportunity of passing your finger into the rectum." - Dr, Sir James Sawyer, MD in "Coprostasis; Its Causes, Prevention and Treatment", 1912.

Colonic Irrigation in Chronic Colitis

"**Chronic Colitis:** This condition, how ever produced, interferes with the regularity of bowel movements, and its treatment is essential to the cure of the constipation when present. In fact, the treatment of the latter must be considered subordinate to the requirements for the colitis. Accordingly one of the most important features of the treatment is the reduction of the intestinal irritation to the lowest possible point.

Common Sources of Irritation: Stagnation of faecal material in the colon.

When by any factor the inflamed area is irritated the patient experiences considerable distress and there follows an increased amount of mucus in the stool.

The use of cathartics in simple intestinal atony should be regarded as harmful, but when this is complicated with a colitis they are doubly injurious.

The diet should be regulated with the sole purpose of keeping up nutrition and avoiding irritation of the inflamed area.

The most urgent problem in the majority of cases is the regulation of the bowels. For this purpose, clinical experience within recent years has demonstrated that colonic irrigation affords the best results.

Aqueous enemata are indicated when diarrhea is present, and olive oil in cases of constipation. The treatment of these patients by oil enemata is recommended by Fleiner, Einhorn, Hemmeter and many other authorities.

From 4 to 10 ounces of oil should be injected at bed time and retained all night.

The oil should be at body temperature, and should be injected slowly.

This is generally effectual in producing a bowel movement on the following morning.

When diarrhea is present the necessity for a prompt and thorough irrigation of the colon is urgent, for not only is there excessive local irritation but there is also rapid absorption of toxins. Accordingly colonic irrigation with warm water or salt solution is indicated.

The aqueous enemata would seem to be recommended in these cases by the fact that they are in harmony with and assist nature's method of cleansing the bowel.

In cases of constipation, the oil enemata are indicated.

They soften the excreta, lubricate the bowel and gently stimulate peristalsis.

The treatment should be given every night for one or two weeks and then at gradually lengthening periods.

Eventually the use of the oil may be discontinued. We have found that this procedure gives very good results in mild cases of colitis, and is an excellent and reliable method of securing a movement of the bowels. We have found the same method of treatment efficacious in spastic constipation.

In a number of cases of chronic constipation considerable benefit may be derived from various methods of improving the action of the abdominal muscles. Contraction of these muscles increases the intra-abdominal pressure, and furnishes massage to the loaded bowel.

There are three methods of increasing their activity:

1. By massage, either by manipulation by the hand or by means of the cannon ball.
2. By physical exercise directed to the development of these muscles.
3. By education of the patient to exercise a proper control and use of these muscles immediately before and during defecation.

To obtain the best results from massage it should be administered by a skilled masseur. It is an art of considerable value that cannot be acquired without some natural capacity and study.

The cases in which the best results are obtained are:

1. Patients who have had insufficient physical exercise for years.
2. Patients with sluggish circulation and faulty nutrition.
3. Neurotic patients.

The manipulations produce some stretching of the muscle and in this way improve its tone, and the circulation is favoured by the kneading and squeezing.

Any physical exercise that brings into activity the abdominal muscles may have a beneficial effect in some cases of chronic constipation.

The great majority of people are unaware of the fact that the abdominal muscles are voluntary.

Efforts to produce their contraction afford but feeble and tardy results, and in some patients there is no visible movement of the abdominal wall.

This is not normal and it is a very common pathologic condition among these patients. Compensation for the inactivity of the abdominal muscles is provided by the diaphragm and by posture at stool.

Straining is accomplished not by the action of the abdominal muscles, but by the contraction and descent of the diaphragm and by flexion of the body, the pelvis and chest being flexed on the abdomen.

It may be readily seen that this position is the least favourable to any efficient contraction of the abdominal muscles.

Passive resistance is furnished by the abdominal fascia and the viscera are crowded toward or into the pelvis.

In addition to this the natural curves of the sigmoid are changed into sharp angulations. Physiologically and mechanically this is incorrect.

There should be little or no flexion of the body, the vertebral column should be held erect and the abdominal muscles should act vigorously in conjunction with the diaphragm. In this way intra-abdominal pressure is increased with little or no tendency to ptosis of the viscera, and this pressure facilitates the passage of the excreta from the sigmoid.

In addition to this the voluntary contraction of the abdominal muscles may be utilized to give a very effectual massage to the bowels, and if practiced regularly each day, is a valuable agent in the cure of some cases of chronic constipation.

We may state here that with a little instruction a patient acquires complete control over these muscles so that their response to volition is as prompt and energetic as that of the biceps." - Dr James Alexander MacMillan, MD in "Chronic Constipation and Allied Conditions, Pathology, Etiology, Diagnosis", 1908.

The Wonders of Water
What Makes It All Possible

"Water is a very special substance. It covers two-thirds of the surface of planet Earth. It also constitutes 99% of the molecules making up the human body.

There is much known about the basic physical properties of water, but very little was known, until recently, about the subtle-energy properties of water.

Much of the preliminary evidence for these special properties comes from studies on the effects of "laying on of hands healing" conducted in the 1960s.

Of all the healing research carried out during that period, the most significant groundbreaking work was done at McGill University in Montreal by Dr. Bernard Grad.

(B. Grad, in "Dimensions in Some biological effects of the laying on of hands and Their Implications", Dimension in Wholistic Healing: New Frontiers in the Treatment of the Whole Person, 1979)

Grad was interested in finding out if psychic healers had real energetic effects upon patients, above and beyond what might be due to belief and "charisma."

He wished to separate the physiologic effects of emotion (the so-called placebo effect) from true subtle energetic effects on living systems.

To study this phenomenon, he created a series of experiments which substituted plant and animal subjects for human patients in order to eliminate the known effects of belief. Of greatest relevance here is Grad's work with barley seeds.

To create a "sick plant patient", Grad soaked barley seeds in salty water, which is a known growth retardant.

Rather than work directly with the seeds, Grad had a healer do a laying-on-of-hands treatment on a sealed container of salt water which was to be used for germinating die seeds. The barley seeds were placed by lab assistants in salt water taken from untreated or healer-treated water containers arbitrarily labelled "One" or "Two".

Only Grad knew the correct identity of the salt-water bottles.

The seeds were separated into 2 groups, differing only in the salt water with which each group was initially treated.

Following saline treatment, the seeds were placed in an incubator and studied for signs of germination and growth.

Percent germination of seedlings was calculated and statistically compared between the 2 groups.

Grad found that seeds exposed to healer-treated water sprouted more often than those in the regular saline group.

Following germination, the seedlings were then potted and placed in similar conditions of growth.

At the end of several weeks, the plants were statistically compared for height, leaf size, weight, and chlorophyll content.

Grad discovered that plants watered with the healer-treated water were of greater height and chlorophyll content.

His experiment was repeated a number of times in the same laboratory with similar positive results. Following publication of Grad's work, other labs in the United States had success in reproducing his results utilizing different healers.

Because of his success, Grad utilized the same experimental protocol to test other subtle energetic effects upon seedling growth rate. Of particular interest was Grad's success in stimulating the growth rate of plants utilizing water treated with common magnets!

Although skeptical scientists hypothesized that Grad's healer was cheating by palming magnets, sensitive magnetometers were unable to detect such fields around the healer's hands. More recent studies by Dr. John Zimmerman, utilizing ultrasensitive SQUIDs (Superconducting Quantum Interference Devices) as magnetic measuring tools, have detected weak but significant increases in the magnetic field emanations of healers' hands during the healing process.

(New technologies detect effects of healing hands, Brain/Mind Bulletin, Vol. 10, No.16, 30 September 1985)

Although the signals emitted by healers' hands during healing were several hundred times that of background noise, these levels of magnetism were still significantly weaker than those produced by the magnets which Grad was using in his experiments. (This finding will have great significance when we later discuss the nature of healing energy.)

Another unusual variation thought up by Grad consisted of giving water to psychiatric patients to hold.

This same water was then used to treat barley seeds. Interestingly enough, water energized by patients who were severely depressed had the reverse effect of healer-treated water in that it suppressed the growth rate of seedlings!

Because of the positive growth effects attributed to the healer-treated water, Grad carried out chemical analysis on this water to see if energizing had caused any measureable physical changes.

There were significant changes in infrared spectroscopy analyses of healer-treated water. This test revealed that the atomic bond angle of the water had shifted slightly from normal.

Minor shifts in the molecular structure of healer-treated water also produced decreased hydrogen bonding between water molecules.

Testing confirmed a significant decrease in the surface tension of healer-treated water, a result of the altered hydrogen-bonding between the energized water molecules.

Curiously, magnet-treated water showed similar decreases in surface tension as well as positive effects in stimulating plant growth.

(Robert Miller, in "Methods of detecting and measuring healing energies", Future Science. Doubleday/Anchor, 1977)

Studies by Douglas Dean and Edward Brame, (Dean, D., and E. Brame, "Physical Changes in Water by Laying-On of Hands," Proc. 2nd Internat. Conf. Psychotronic Res., 1975) and more recently, Stephan Schwartz with Edward Brame and others, (Infrared spectra alteration in water proximate to the palms of therapeutic practitioners) have replicated Grad's findings of alterations in infrared spectroscopy and bond-angle changes in healer- treated water.

This material has been presented not so much for its relevance to psychic healing but because of the significance of these findings in illustrating the subtle energetic properties of water.

This is a critical point which has been missed by most researchers familiar with these experiments on healing.

It would appear that water can be "charged" with and then "store" various types of subtle energies.

Subtle energy of both a beneficial and detrimental nature can be stored, as evidenced by Grad's studies utilizing healers and depressed patients.

Treated water was able to induce measurable changes in plant physiology and growth, although there were no physical substances added to nor detected in the water.

During the process of energizing, the healers had no physical contact with the water within the sealed flasks.

Their hands were separated from the water by the glass walls of the containers.

These experiments on the subtle energetic properties of water have relevance in examining the known principles of drug therapy vs. the unknown mechanisms of homeopathy.

According to modern pharmacokinetic theory, it is important to give patients a high-enough drug dosage to obtain therapeutic blood levels.

Most drugs cause what are known as dose dependent effects.

The higher the amount of drug given, the more potent the physiological effects." - Dr Richard Gerber, MD, in "Vibrational Medicine", 2001.

Hydropathy in the Treatment of Chronic Diseases

"Cold water the benefits to be derived therefrom in the treatment of diseases.

The therapeutic effects of cold water are dependent on its physiological action; this action we may refer to the 5 following heads:

1. Effects on the circulation. Greater activity imparted to the circulation. Improved oxygenation of the blood. Stimulation of the haematopoétic organs.

This explains the beneficial effects of hydrotherapy in anaemia and chlorosis.

2. Effects on the nervous system. Enhanced functional activity of the cells of the spinal cord, greater regularity imparted to the functions of the great sympathetic, of the cord, and of the brain. This constitutes hydrotherapy one of the most powerful agents in the treatment of nervous diseases, and in particular of neuroses

3. Action on nutrition. By the increased energy which it gives to the phenomena of cell-life, hydrotherapy occupies an important place in tonic and reconstituent medication. Hence it is applied with advantage to the treatment of consumptive and diathetic affections.

4. The revulsive effects which are caused by the application of cold water are utilized in visceral congestions (hepatic, splenic, uterine congestions, etc.). Here you will see hydrotherapy render you valuable service.

5. When the action of cold water is prolonged, it depresses the temperature. It is then an antithermic remedy, and as such occupies an important place in the treatment of acute febrile maladies.

As I intend to devote a special lecture to the antithermic properties of cold water, I shall in this lecture occupy myself only with the applications of hydrotherapy to apyretic and chronic diseases, following the order which I have above indicated.

The indications and contraindications for hydrotherapy. These pertain to the state of the subject, the season of the year, and the establishments or places where the hydrotherapic treatment is carried out.

We will begin with the indications and contraindications based on the state of the patient, and here we shall have to examine the age, the sex of the subject, the manner in which he supports the cold water, the chronic diseases from which he is suffering, or the intercurrent diseases which may appear during the course of the treatment.

Hydrotherapy is applicable to all ages, and from the very moment of birth some physicians order cold water lotions for the infant. Nevertheless, in advanced life, and especially in very old age, great precautions are necessary in the application of cold water, precautions called for by reason of the chronic diseases which ordinarily affect old age, and which constitute formal contraindications to the employment of hydrotherapy. The question of sex raises two interesting points pertaining to indications and contraindications, the one concerning the female patient, the other the physician. With reference to the patient, will it do to give the douche during the menstrual period and during pregnancy?

Priessnitz gave an affirmative answer to the first of these questions, and deemed that the menses should never interrupt the Hydrotherapic Treatment.

This has since been the customary practice in Germany and in England.

In France Fleury has followed the principles of Priessnitz, and recommends the continuance of the Hydrotherapic Treatment during the monthly periods.

It is not so during the period of pregnancy, and, save in quite exceptional cases, pregnancy is an absolute contraindication.

Is it the same during lactation?

This question may be answered in the negative, and women who nurse their babes, and who are run down and exhausted by lactation, may derive a decided benefit from cold douches.

Only, these douches may provoke a return of the menses, and this is a point to which your attention should always be directed.

Much care and judgment should also be used in the administration of hydrotherapy to women, because of the readiness with which the uterus and its annexes may be congested.

Under the influence of cold-water applications, the blood is driven from the surface to the internal organs; hence it is that we sometimes see uterine and ovarian congestions ensue after the use of cold douches, especially when these have been of too long duration. I advise you, then, to make these douches very brief when administering them to your female patients, and to douche the feet with warm water, or give a warm-water foot-bath during the application of the cold douches.

The manner in which patients tolerate the douche furnishes certain general indications and contraindications. The excessive sensitiveness of some patients is such that they cannot bear the application of cold water, which provokes suffocations and palpitations sufficiently intense to render the douche exceedingly painful. In these cases, you will have to accustom your patients to the action of cold water by beginning with tepid douches, and using douches of decreasing temperature till the aversion to cold water is overcome.

There is another quite frequent result of the cold douche when the application is made to the head; I allude to those painful sensations about the head, which are chiefly characterized by a very uncomfortable feeling of tightness in the temples, and to which the name of hydrotherapic cephalalgia (pain in the region of the head or neck) has been given.

You can avoid this headache by the following means: either take care not to douche the head, or apply douches at the same time to the feet with warm water at 400 or 500 C, or, still better, place the feet in a tub of water at 380 C. You may also employ the douche with decreasing temperature, of which the initial temperature shall be from 240 to 280 C.

Certain patients do not react under the influence of cold water, or they react incompletely. As it is this reaction which we always desire to obtain in the applications of cold water, it is well to give particular attention to this point, and you can combat this incomplete reaction either by giving douches of 4 or 5 seconds duration, or by employing the Scotch douche, and especially by favouring the cutaneous circulation by dry frictions and by movements.

Not every patient can with impunity be subjected to Hydrotherapy, and there are diseases which constitute a formal contraindication to the employment of this therapeutic agent.

Therefore you ought carefully to examine your patient before advising cold water treatment.

Your examination should pertain especially to the state of the heart, the blood-vessels, and the lungs.

The organic diseases of the heart constitute a contraindication to the employment of cold water, as the impression of cold provokes cardiac perturbations which may have, and which have had, fatal consequences.

The state of the blood-vessels, and, in particular, arterio-sclerosis, whether affecting the aorta or the vessels of the encephalon, may require of you great prudence in the employment of hydrotherapy.

There is reason in these cases to fear the production of too active encephalic congestions, which may lead to the rupture of degenerated capillaries.

As for affections of the lungs, I come to speak of the indications for hydrotherapy in the treatment of wasting diseases, and, in particular, of pulmonary phthisis, I shall show you that if here in France we are little inclined to douche our tuberculous patients, it is not so in Germany, where we see the cold-water treatment undertaken even in the most advanced periods of tuberculous diseases.

The acute or subacute intercurrent affections which supervene in the course of a hydrotherapic treatment, in most cases call for suspension of cold-water applications. But in this question of interdiction we should make due account of the intensity of the affection, and while a severe bronchitis should be an indication for interruption of the treatment, a slight cold need be no reason for its discontinuance. You should be guided in these cases by the resistance of the subject.

Hydrotherapy may be practised in all sea sons, and in the coldest winter weather as well as in the hot days of the summer the cold-water treatment may be carried out. It is well to remember, however, that in proportion as the surrounding temperature falls, the douches are the more painful; hence spring, summer, and early autumn are the more suit able seasons for commencing a water-cure course.

We have considered successively the general indications and contraindications based on the state of the subject and the season of the year, and it remains for me, in accordance with the plan I have marked out, to say a few words about Hydrotherapic establishments.

These establishments render us great service. Completely equipped with every kind of apparatus, directed by men who make a speciality of hydrotherapy, often placed in sanitary and mountainous situations, where the water-cure methods are supplemented by an admirable hygiene, these establishments furnish the very best conditions for the restoration of our patients.

But let us not forget that they are not indispensable, and, save in cases where the application of cold water demands extreme skill and care, one may obtain all the benefits of Hydrotherapy in the bathing establishments, which are today, for the most part, furnished with special apparatus, or the water treatment may be carried out at the homes of patients. Among the conditions which call for the placing of patients in a special establishment of hydrotherapy, we may reckon certain neuroses, and especially hysteria.

In the case of many neuropathic patients, and hysterics in particular, it is absolutely necessary for their successful treatment that they should be removed from their surroundings and placed among strangers, and here the Hydrotherapic Sanitarium supplies a desideratum.

Unfortunately, it is principally nervous patients that resort to these establishments, and the hysterical female leaves one environment particularly adapted to foster her malady for another which is almost as unfavourable.

Whether you direct your patient to one of these fashionable water-cures, or to an ordinary bathing establishment, you must be particular in your instructions as to how you wish to have the cold-water treatment applied.

You will then indicate the nature of the douche, its temperature, its duration, the parts of the body which you desire to be affected by the douche, the measures to be taken after the douche, etc.; and the more careful you are in your directions, the more the patient will realize the importance which you attach to this mode of treatment.

Having now finished these general considerations, we will pass rapidly in review the different chronic affections where hydrotherapy may be applied with success, and we will follow the order laid down at the beginning of this lecture.

Hydrotherapy being par excellence tonic in its effects on the general system, and reconstituent to the blood-corpuscles, is one of the most useful modes of treatment in anaemia and chlorosis.

Scheurer, of Spa, who has especially insisted on the benefits of the water-cure in chloro-anaemic states, shows that these benefits result from the physiological effects of cold water, effects which are multiple, and may be referred to the 6 following heads:

1. Greater activity given to the functions of the nervous system.
2. Reawakening of the appetite and improvement of the digestive powers.
3. Better distribution and better repartition of the mass of the blood.
4. Re-establishment of the functions of the skin.
5. Continuous improvement of hsematopoesis by the regeneration of the globules and their return to the physiological figure and value.
6. Augmentation of the combustions in the anatomical elements of the tissues.

In the treatment of chloro-anaemia you should employ cold douches of short duration. Bottey would not have the duration of these douches exceed 2 or 3 seconds, the water not to be warmer than 8° C.

Our water-cure establishments seldom give water quite as cold as this, and I would advise that the temperature of the douches should be from 10° to 140 C., and that the duration should be from 10 to 15 seconds.

Reaction must be favoured by dry rubbing and by exercise.

According as you have to do with chlorosis associated with menorrhagia or amenorrhoea, your Hydrotherapic procedure will vary.

In the menorrhagic form, you will douche the feet with cold water, and localize the effects of the douche upon the upper part of the body.

In amenorrhoeic chlorosis, you will douche the feet with warm water, and direct the main douche to the loins and trunk.

I pass now to the uses of hydrotherapy in diseases of the nervous system.

It is especially in the chronic diseases of the nervous system that usage is made of Hydrotherapy; and to give order to my exposition I shall examine successively the applications of cold water in neurasthenia, the various other neuroses, and in neuralgia, and lastly, in diseases of the spinal cord and encephalon.

The number of neurasthenic and neurataxic (hysteria, and of hysterical or neurataxic pains) patients goes on increasing constantly, and this increase results from the social conditions in which we live.

As it is in the treatment of this malady that hydrotherapy achieves some of its most brilliant triumphs, you easily under stand that this is one of the causes of the prosperity of water-cure establishments, and in the statistics of the St. Andre, at Bordeaux, published by Delmas, we see, in fact, that neurasthenic patients constitute 60%, of all the nervous patients treated in this establishment.

It may be said that all these Neuropathic invalids, all patients with unbalanced Nervous Systems, are tributary to a threefold Hygienic Treatment:

1. Hydrotherapy
2. Gymnastics
3. Diet

I have just told you how to employ the cold-water treatment in these nervous disorders; in previous lectures I have spoken of gymnastics, and it remains to say a few words about diet.

Since Bouchard, by his brilliant researches, has called anew our attention to dilatation of the stomach, we may lay down this rule, which admits of but few exceptions, that in the greater number of these neurotic and pseudohysterical patients there exists a dilatation of the stomach.

We may even add another generalization, that if it is the case of a female, and if the dilatation of the stomach is considerable, there exists concurrently an ectopia (malposition) of the right kidney.

If the pathogeny of this ectopia is easy to grasp, since the dilatation of the stomach leads to congestion of the liver, which, conjoined with the habit of wearing the corset, explains the depression of the right kidney, it is not so with the relation which exists between the gastro-ectasis and those nervous conditions.

Is it the paretic state of the nervous system which, existing prior to the dilatation, has favoured the latter?

Or is it the dilatation which has determined the nervous phenomena?

We do not know; but in any event it is a fact that a judicious dietary regimen, adapted to the gastrectasis, greatly relieves and benefits the patient.

How ought the water-cure treatment to be applied to the neurataxic?

Here all forms of hydrotherapy may be employed, according to the indications

furnished by the kind of nervous disorder which you have to treat.

Is it a case of nervousness with great excitability, and exaggerated sensibility of the skin? You require here tempered douches of 280 C., for it is a sedative action which you need.

On the other hand, have you a melancholic, depressed patient to treat? It is the tonic action of cold water which is needed, and you should counsel douches of from 10° to 120 C., of brief duration, followed by energetic frictions.

Is the state of depression still more marked, and have you to do with a veritable case of melancholic hypochondriasis?

You want to produce a still greater stimulation from the cold water, and an excitant effect. This you will obtain by the Scotch douche.

By the side of neurasthenia we must place hysteria, which has with it points of contact so numerous and so intimate that it is often very difficult to separate the two affections, and the diagnostic difficulty is the greater from the fact that we find at the present day a great many hysterical men. **Here, too, Hydrotherapy is of great utility, and as in the case of the neurosis just mentioned**, the methods of the water-cure treatment should vary according to the forms of hysteria.

Excitement

In the forms characterized by excitement, which are much the most frequent, you should use the sedative douches, douches whose temperature is 280 to 300 C.

Depressive

In the depressive forms it is the tonic douches, very cold, and of very short duration, which are the most advantageous, or else the revulsive douches (i.e., the Scotch douches).

This necessity being conceded, of varying the mode of application of hydrotherapy in accordance with the particular type of this multiform malady which is before you, you are prepared to understand the causes of the success, or want of success, which has followed the water-cure treatment of this affection, also the need that the physician should daily watch the results of the treatment.

Hysteria

In the grave cases of hysteria it is necessary to conjoin isolation with hydrotherapy. The hysterical patient often, if not always, finds in her environment elements which encourage or provoke her nervous manifestations.

Therefore she must be removed from her wonted surroundings if she would obtain any real benefit from hydrotherapy.

You will, then, place your patients suffering from grave hysteria in one of the hydropathic sanitaria, where there are all the modern appliances, and where the patient will obtain entire change of scene.

Unhappily, as I have just said, the majority of patients who frequent these establishments being afflicted with nervous maladies, the hysterical female quits one bad environment for another almost as bad.

Nevertheless, the effect of the novelty will last for some time; the patient will not all at once fall back into her old habits, and you will be able the first month or so to obtain decided benefit from the change.

Epilepsy

Indicated by Giannini as useful in epilepsy, hydrotherapy has been employed in this disease principally by Fleury, by Rosenthal and by Nothnagel; and recently Bricon and Bourneville (Clinical and Therapeutical Researches on Epilepsy and Idiocy for the Year 1886; On the Treatment of Epilepsy 1882) have studied its effects in the falling sickness. Their conclusion is that if hydrotherapy is powerless to cure epilepsy, it retards the fits and considerably ameliorates the state of patients subjected to this treatment.

Cold-water applications in epilepsy, it does, render us real service, and especially in keeping up the tone of the system, and preventing too great depression.

Hydrotherapy offers almost the only means for combating this torpor and depression, and you should always choose for this purpose the short, cold douches, or the Scotch douches, on which you rely for a tonic and revulsive action.

I shall say but little about chorea.

Gymnastics and Hydrotherapy constitute the bases of the treatment of this neurosis.

You ought here to employ chiefly the tepid douches; and this is the more important because the rheumatic nature of this affection demands great prudence in the external use of cold water.

I come now to the employment of Hydrotherapy in the Treatment of Neuralgia.

Hydrotherapy is an agent which is curative in pain; hence it has been employed with success in the treatment of Neuralgias.

Here the hydrotherapic formulae must vary according to the nature of the neuralgia. But, in general, it is the revulsive action which is principally sought, and for this reason the Scotch douche is chiefly employed.

In neuralgias of rheumatic origin you should resort to baths and douches of elevated temperature; and here you may employ to advantage the hot-air or the hotmoist-air chambers, or the vapour-douches.

The application of hydrotherapy to diseases of the spinal cord and brain has given rise to much difference of opinion and to much discussion, and if there has been such a divergence of views relative to the value of the cold-water treatment in chronic diseases of the cerebro-spinal axis, it is because that authorities have not always taken pains well to define the cases, and especially the periods of the disease, when hydrotherapy is applicable.

In the diseases of the cord, this distinction has the utmost importance.

The cold douche, of short duration, directed along the vertebral column with a certain force, determines more or less congestion of the cord, and may be applied with success in all cases where anaemia of this nerve-centre is the cause of the morbid phenomena observed.

On the other hand, in all cases where medullary excitation and congestion exist, cold-water applications can only do harm.

Therefore, in medullary congestion, in the myelites in their congestive period, in the scleroses, during the active hyperemia which precedes the hyperplastic process, the cold douche will be more injurious than useful, and you can only employ to advantage the tepid douches. This is the form of hydrotherapy counselled by Delmas and Beni-Barde.

When, on the contrary, the congestive stages are passed, you can relinquish the sedative effects of the tepid douche, and have recourse to the tonic effects of the cold douche.

The treatment of affections of the spinal cord, and sclerosis in particular, demands, then, on the part of the physician, extreme watchfulness and a great familiarity with Hydrotherapic practices.

Therefore I can not too much recommend you, to exercise the utmost care and caution in prescribing Hydrotherapy to tabetic (tabes dorsalis tabetic pains) patients; for you may, by an injudicious employment of cold water, considerably aggravate their situation.

What I have said concerning diseases of the spinal cord is also applicable to the diseases of the brain, and the same caution is demanded in the use of cold water in these affections.

For my part, whenever I discover material lesions on the part of the cerebrum, material lesions, be it understood, I refuse to recommend hydrotherapy, fearing always that the circulatory troubles of the meninges which are produced under the influence of cold water may aggravate the condition of the patient.

I will just mention, without dwelling there on, the employment of Hydrotherapy in the various forms of mental alienation.

Hydrotherapy has long been counselled in these affections.

But here, as in the case of spinal and gross cerebral diseases, the results have been contradictory, because medical authorities have not always taken pains to specify precisely the indications and rules applicable to each case in particular.

All depends on whether the brain is in a state of congestion or anaemia.

Take, for instance, a melancholic patient of the depressive type, and here the cold water may give you good results, while in general paralysis of congestive form the cold douche will only aggravate the situation.

It will, then, be necessary to use great care and judgment in the employment of hydrotherapy in the treatment of mental diseases.

Hydrotherapy, I have told you, is one of the most powerful modifiers of nutrition; hence, whenever the nutritive functions are altered or disturbed, the water-cure has been recommended. And this leads me to allude to the effects of hydrotherapy in consumption and diathetic disorders.

As type of these consumptive maladies, we will take pulmonary phthisis.

In France we are not, as a rule, favourable to the employment of Hydrotherapy in confirmed phthisis pulmonalis; and notwithstanding the affirmations of Fleury, and the observations which he has published in support of the cold-water treatment of consumption, the greater part of the medical fraternity do not make use of cold baths or douches in tuberculosis.

This is not the case in Germany, where we see hydrotherapy applied to the treatment Of pulmonary phthisis in its most advanced stages.

The most interesting statistics respecting the results obtained from cold water in the treatment of tuberculosis have been furnished by Sokolowski, who has shown us that at the establishment of Gorbresdorf, in Silesia, out of 106 cases of tuberculosis, thus subdivided: 60 in the first stages, 29 with consumption marked, and 17 in advanced phthisis, after 6 months of treatment by cold water 39 were cured, 34 were notably improved, 19 were simply ameliorated, in 7 there was no result at all, in 3 the condition was evidently made worse, and 4 died. (Sokolowski, "Treatment of Tuberculosis by Hydrotherapy" (Bulletin de Thérapie, 1877, p. 343)

Phthisis
(Pulmonary Tuberculosis or Progressive Wasting Disease)

These statistics are among the most favourable, and if we were to trust to these alone we should deem ourselves warranted in employing the cold-water treatment, even at the most advanced periods of the disease.

But I believe that this is going rather too far; and in the treatment of phthisis it is chiefly as a means of prophylaxis that Hydropathy will render you service, and Jaccoud has rightly insisted on this point.

Powerful modifier of nutrition, cold-water treatment will here come in with the other means furnished by hygiene, and enable you to fortify individuals hereditarily predisposed to tuberculosis, and render their organisms an unfit habitat for the tuberclebacillus.

When the phthisis is confirmed, it will be necessary for you to be much more wary in the employment of cold-water applications, without at the same time discarding them altogether, for, as Peter has pointed out, we have here a means which enables us to contend with advantage against the night-sweats so abundant and so weakening in pulmonary tuberculosis.

Here you will begin with tepid water or spirit applications, and after each ablution you will give the patient a thorough rubbing, which stimulates and fortifies the skin, and it is only when the patient is habituated to these practices that you can safely make use of cold lotions rapidly applied with a sponge dipped in cold water.

By the side of phthisis I would place 3 diseases in which the nutrition is profoundly disturbed:

1. Diabetes.
2. Polysarca (adiposis).
3. Gout.

Here also hydrotherapy may render you great service.

In the diabetes of overweight individuals, hydrotherapy coupled with an appropriate diet treatment and the movement-cure constitutes a line of treatment which enables us to improve the tone of our patients and favourably modify their nutritive functions.

You can employ here the cold douches, and bring in the tepid douches or the Scotch douche as adjuvants, if the skin is dry and performs its functions imperfectly.

What I have said concerning diabetes I will repeat with reference to obesity. Here also cold douches, energetic frictions, and massage are positively indicated.

There is a Hydrotherapic practice which is applicable to the treatment of obesity, which brings about, as many observers have shown, and in particular St. Germain, a rapid diminution in the weight: I refer to the Hamman bath, where are combined the effects of heat and of cold water with those of massage and of frictions.

Gout

In the paroxysms of acute gout there is a hydropathic procedure which often relieves the patient: I refer to wet compresses, with which the inflamed joint is surrounded, and which are frequently renewed.

In the interval of the attacks gout is still tributary to hydrotherapy, which may be employed under three forms: tonic douches, sedative douches, and revulsive douches. In gouty patients who are atonic, a cold douche should be employed; in those that manifest a predominance of the congestive element

the tepid douches should be preferred; in others whose skin performs its office poorly you will employ the Scotch douches.

But in all these cases, before prescribing these different forms, it will be necessary for you to inform yourself with great care as to the state of the kidneys and blood-vessels, for arterio sclerosis is very common among the podagrous.

Rheumatism in its different manifestations is also tributary to hydrotherapic treatment; not, be it understood, in the acute stages of the disease, nor in patients affected with cardiac complications, but in the chronic forms and in arthritic cases.

The activity given to the capillary circulation of the skin toughens the integument and diminishes its sensitiveness to changes of the temperature; it also energizes the nutritive functions, which are always below par in the rheumatic.

Remember that it is necessary to be wary in the outward use of cold water, for you may by careless or injudicious applications see the pains in the joints return.

Here, again, you will be likely to avoid this danger by the employment of tepid water.

There is still another mode of hydrotherapy, or, rather, balmo-therapy, very serviceable in rheumatism: I refer to Vapour-Baths, or Russian or Byzantine baths.

There is also a mode of using vapour of water, which is quite peculiar: I refer to the Vapour-Douche, which is exclusively reserved for the treatment of rheumatic pains in their acute period.

Hydrotherapy has quite a role in albuminuria (albumin in the urine, a symptom of kidney disease), and the service which it renders in this disease is readily explicable by the intimate relation which exists between the kidneys and skin.

The recent writings of Semmola have even shown us that this relation between the skin and the kidneys is not simply physiological, but from a pathological point of view we find in Bright's disease an alteration of the skin characterized by atrophy of the rete Malpighi and sudoriparous glands.

There fore, since 1861, the physician of Naples has insisted on the necessity of promoting a healthy state of the cutaneous functions in Bright's disease.

But all hydrotherapic rules are not applicable to these cases; cold douches at high pressure over the region of the kidneys cannot but have injurious effects, and here we witness the triumph of tepid douches, and even the Scotch douches, in patients who have considerable vital resistance. You can also make use of the dry pack, and, above all, of energetic frictions over the entire cutaneous surface.

Cold Water in Chronic Diseases

I shall have finished this long detail of the applications of cold water in chronic diseases when I shall have pointed out the revulsive effects of these applications in combating the congestion of the splanchnic organs when this congestion has become chronic.

Pre-eminently among these congestions we must reckon those of the liver and kidney. Henry is the most ardent advocate of the Hydrotherapic method of combating hyperaemia (excess of blood) of these 2 organs, and the success which he has attained demonstrates the importance of this mode of treatment.

Therefore, in the case of individuals returning from hot countries to their native clime with voluminous livers, or in the case of ague patients with greatly enlarged spleen, you will obtain from cold douches of short duration directed upon those organs a marked resolvent action.

Uterine affections have also been subjected to hydrotherapic treatment, and for this purpose local vaginal douches have been used.

Metritis (inflammation of the wall of the uterus)

You should be very chary (cautious) in the use of coldwater applications in these diseases. To undertake a water-cure treatment in the various forms of metritis (inflammation of the wall of the uterus) the utmost skill and experience

are requisite, for hydrotherapic rules vary according to the periods of the disease, and even according to circumstances such as may daily supervene. But everybody admits the harm which may result from vaginal douches too forcible or too prolonged. These douches, when they thus too harshly strike the uterus, congest that organ and its appendages, and often cause severe abdominal pains.

Rectal and Anal Congestions

Like the uterine congestions, rectal and anal congestions may be treated by Hydrotherapy. In constipated haemorrhoidal patients, or in such as are affected with prolapsus of the rectum, the cold douche is perfectly indicated.

In cases of anal spasm, so frequent an accompaniment of fissure of the anus, you will often see the symptoms disappear under the influence of the peri-anal percutant douche.

Spermatorrhoea

Spermatorrhoea (excess of semen) is one of the diseases where hydrotherapy is likely to render great service. Here you can employ the percutant douche over the region of the kidneys and on the perineum.

Incontinence of Urine

Lastly, in that so frequent infirmity of young children, incontinence of urine, cold water, applied in the form of douches or lotions, is a treatment which ought always to be put in usage. In this long and tedious enumeration I have omitted many morbid conditions where hydrotherapy has been employed, only pointing out the principal. If you desire more complete information on these subjects, I would refer you to the excellent and masterly treatise of Beni-Barde (Trailed d'Hydrotherapie, 1874), or to the compendious and practical manual of Delmas (Manual d'Hydrotherapie, 1883).

The Value of Hydropathy

But Hydrotherapy is not applicable solely to pathological cases; it ought to have a large place in your prescriptions of hygiene. By favouring nutrition, by regulating the functions of the nervous system, by promoting the circulation of the various splanchnic (viscera) organs, hydrotherapy wonderfully assists the healthful development of the human frame.

So you ought to insist that in all large educational institutions there shall be a department where the benefits of the cold-water treatment can be obtained.

For my part, during the many years that I have been called to direct the medical service of several seminaries for young ladies, I have always seen great benefit derived from cold douches as a part of the hygiene of these institutions.

It is the same with great aggregations of men, as in the army, where cold

douches, as a means of cleanliness, as well as for their tonic effect, are always to be recommended as a hygienic measure. Lastly, at an advanced period of life, the practice of daily resorting to the douche is still to be commended.

Therefore we ought to favour and encourage every enterprise whereby, to gymnastic halls and other places for promotion of corporal exercises, hydrotherapic equipments are added.

Such are the general considerations which I wished to present concerning Hydrotherapy as a curative agent in the treatment of chronic diseases and as a means of hygiene." - Professor Dujardin-Beaumetz, MD Paris, France in "The Therapeutic Gazette", Vol.12, 1888.

Acute Pneumonia or Bronchopneumonia Tuberculosis

"The measures appropriate in ordinary tuberculosis will apply as well in acute tuberculosis. In acute tuberculosis we must rely on Hygiene and Hydrotherapy. The Emunctories (bowels, kidneys and skin), must be made to functionate as well as possible. We give expectorants, eucalyptol and oxygen." - Dr John B. Huber, AM, MD, in "Acute Pulmonary Tuberculosis", The American Journal of Nursing, November 1915.

Lukewarm or Cold Baths in Typhus

"Petrusco, of Bucharest ("Le bulletin médical, Paris", 11 AprIL 1894) has systematically employed them in 2 epidemics, with highly satisfactory results.

The treatment modifies the cyclical evolution of the fever, saves the patient from the organic weakness of a long disease, and enables him to recover sooner; there is no contraindication. He prefers the wet pack to both baths and showers.

Combemale ("Le bulletin médical, Paris", 1 Apr. 1894) treated 124 cases of **Typhus Fever**:

17 Cases were subjected to the **expectant method**, with a mortality of 35%;
36 Patients had **2 cold baths a day**, mortality 33.3%;
6 Baths a day, mortality of 16.5%;

In other cases:

6 Enemata a day of 1 litre of cold water each were given, mortality of 28.6%.

The more rigidly Brand's method is followed, the more patients will be saved, an uncomplicated evolution and a rapid convalescence being its chief benefits.

He has seen 14 cases of typhus fever in children under 12 years of age, the youngest being 2 years old. The course of the disease was relatively shorter and milder than in adults, no death occurring.

Nervous symptoms were reduced to a minimum; but the eruption was abundant and generalized, coming out in successive crops.

The temperature ranged about like that of adults, but for a shorter period and with morning remissions." - in "Annual of the Universal Medical Sciences", 1895.

Bath Treatment for Deafness

"Any measure which will help, even in a minority of cases, what is commonly called Chronic Progressive Deafness is worth consideration, especially if it sometimes succeeds where the usually approved methods fail, and if it is a simple procedure capable of supervision by the general practitioner.

The following case illustrates the point.

Case 1

A man, aged 42, consulted me in December, 1927, about deafness in the left ear, which had increased during the previous 2 years. There was no obvious retraction or thickening of the tympanic membranes, but he had difficulty in self-inflation.

With the right ear he could hear a whisper across the room (5.5 metres away); with the left ear, 1.5 metres away.

After treatment by catheter, bougie, and inflation for a year, the condition was worse. A whisper was then heard by the right ear at a distance of 1.5 metres; by the left ear, 600cm. He was ordered hot baths, with a pound of commercial Epsom salts added to each bath immersion for 10 to 15 minutes was advised at bedtime every second night for a week, once during the following week, and then once every 2 weeks.

Within 1 week, the hearing distances for whisper were 4.5 metres and 3 metres (instead of 1.5 and 0.5 metre) for right and left ears respectively.

By May 1930, the distance for each ear had increased to 9 metres.

Improvement is still maintained, and is valuable not only to himself but to his colleagues. The baths are still necessary, but they are taken at longer intervals.

As often happens with new treatment, this first case has perhaps been the most striking. The success induced me to try the method in other cases, and sometimes gratifying results were obtained.

Case 2

For many years a man, aged 64, had increasing deafness for which I tried in vain the usual measures. Some years elapsed, during which he did not consult me, but after the experience mentioned I asked him to see me.

On examination, the right membrane was dull and indrawn, the left was

ruptured and atrophied, and the ossicles were bound in cicatrix.

Conversation voice was heard 1.2 metres away on the right side, 10 cm away on the left side. The latter figure is naturally open to question, because of possible hearing by the right ear even when closed. After treatment by baths for 2 months, the distances were 3 metres feet and 0.6 metre respectively, to his great delight.

Case 3

A hospital matron, aged 33, had tinnitus in the left ear, and slight deafness. The Eustachian tubes were narrow systolic blood pressure 100 mm. Hg. Resection of nasal septum, removal of tonsils, and passage of Eustachian catheter and bougie were all tried, with no obvious benefit.

When the patient reached the age of 38, the tinnitus was worse and was in both ears. When, 2 years later, in May 1930, a whisper was heard by both ears at 2.5 metres, I asked her to try baths. Two weeks later the figures were 6.5 and 7.5 metres respectively, tinnitus not having improved.

Case 4

A lady, aged 60, complaining of deafness beginning in the left ear ten years earlier, came to see me in October, 1930. Both membranes were dull; and inflation by catheter was difficult and imperfect. She heard the conversational voice 38 centimetres away on the right side, and 12 cm away on the left; Weber referred to left. As there was no improvement on inflation, she was asked to try baths.

At the middle of December, conversation was heard on the right side at 5 metres distance (instead of 38 cm), on the left at 25 cm.

Case 5

A man, aged 58, had noticed deafness and tinnitus in the right ear for 5 months. Both membranes were indrawn. A whisper on the right side was heard 5 cm away, but after three weeks of bath treatment the distance had increased to 2 metres; tinnitus was still present, but less marked. The less chronic cases respond more readily.

Those described above were probably “catarrhal” cases, with narrowing of the Eustachian tube-the type in which sweating might be expected to help. Encouraged, however, by the improvement in the cicatricial ear of the patient (Case 2) mentioned above, I resolved to try baths in the following case:

Case 6

A man of 39, who complained of Deafness in the right ear after an explosion in the trenches in 1916, came to me in June 1930; there was also Tinnitus in the right ear. The left ear was normal; the right drum was “gone”, ossicles adherent, no discharge. He was asked to try baths.

The hearing for whisper before treatment was at a distance of 1 metre; after 2 months treatment, at 18 metres.

One might expect benefit from this treatment in patients suffering from Meniere's Complex.

This treatment is likely to succeed only in a minority of chronic cases, though it has had good results in cases in which the usual methods had proved an utter failure and in which treatment had been abandoned.

Success is more probable in the less chronic cases and in acute cases. It fails when it fails to sweat the patient.

Doubling the quantity of salt to the bath seemed effectual in causing the last-mentioned patient to sweat.

Treatment by the emunctories is an old-established method, but far too little attention has been paid to the skin and to the effect of sweating on the mucous membranes; probably civilized peoples sweat themselves too little and pay a price in catarrhal affections.

Thirty years ago treatment by pilocarpine was tried, but had oily a short vogue as "the remedy was worse than the disease."

Caution must be used with baths, too. Hot baths are exhausting and too risky for elderly, weakly, and cardiac patients; 10 minutes immersion may be long enough, and should be followed by a brisk towelling and a warm bed." - Dr James Adam, MA, MD, FRCPS, Surgeon for Diseases of Ear, Nose, and Throat, Glasgow City Hospitals, in "British Medical Journal", 11 April 1931.

"Hydropathy; is in essence the Therapeutic Application of all those Measures, which if given correctly, are helpful in the Reviving of the Body." *- Rui Alexandre Gabirro*

The 5 Pillars of Hydropathy

Kneipp Hydropathy and its Therapeutic indications developed by Msgr Sebastian Kneipp, the Founder and Director of the Health Spa Town of Bad Woerishofen, in Bavaria Germany.

The Kneipp Method of Hydropathy is based on the following pillars:

1. Hydropathy: the controlled use of water jets applied to various anatomical parts of the body such as to arms, torso, knees and legs. The water application varies with the type of each pathology, water application is made by at different temperatures either cold, hot and warm, the application of same is made with curative intent. The treatments include walking barefoot on fresh wet grass with morning dew, among various other techniques to strengthen the body immune system, making the body react by controlling its temperature.

2. Nutritional Therapy: moderate consumption of alcohol, sugar and the preference for a healthy and natural diet, composed by the intake of more fruits, vegetables, sea fish and less consumption of meat.

3. Physical Exercise: life is movement, thus all Kneipp treatments include daily exercise, such as gymnastics, and barefoot walking in direct contact with nature, and the earth grounding energy.

4. Phytotherapy: the healing of the body with the use of different High Value Medicinal Plants for different body conditions.

5. Spirituality: Kneipp stated that a healthy mind achieves a healthy and relaxed body.

Note Concerning the Construction of Hydropath Wet Installations

Hydropath wet installations must necessarily be build using stone, not cement, not any type of brick.

Hydropath wet installations must be constructed using stone.

The rest of the building may be build of other natural and suitable materials, but the wet installations where water is in continuous use must be build using stone only, on walls and ceilings.

Floors any suitable natural material, that aids in the drainage of water.

Chapter 30

Medical Trade Pharmacology and its Effects

"All Medicines can Cause Side Effects." *- in "What Are Side Effects?", NHS, 2018.*

"Medicine has as its ultimate aim the prevention or cure of disease; the practical aspect so far dominates every other that not infrequently it is termed the healing art; indeed, it is difficult to think of Medicine as other than something connected with treatment.

Paul Ehrlich, commenced the Harben Lectures in 1907 by stating:

"There can be no doubt, that the 3 great fields of knowledge;

1. Pharmacology
2. Toxicology, and
3. Therapeutics

In their theoretical and practical aspects form the most important branches of medicine."

- Dr Walter Ernest Dixon, MD, FRS, in "A Manual of Pharmacology", 1929.

Medical Trade Antipsychotic Treatment Have Schizophrenia = Get Parkinsonism

"Tolerability problems, especially Acute Extrapyramidal Symptoms (EPS) (**Dystonia, Akathisia and Parkinsonism**) are common with these so-called conventional agents. Acute EPS has proved to be one of the most problematic side effects caused by these.

Acute Extrapyramidal Symptoms EPS refers to:

1. Parkinsonism
2. Dystonia
3. Akathisia

Which develop soon after the initiation of Antipsychotic Treatment.

Drug-induced Parkinsonism resembles idiopathic Parkinson's disease in many ways, manifesting itself as rigidity, tremor, postural abnormalities and bradykinesia.

Although motor symptoms are the most prominent feature of Parkinsonism the mental effects, bradyphrenia (slow thinking) and cognitive impairment (mental clouding), are equally important as they impair patients ability to undertake the activities of daily living.

The most prominent feature of drug-induced Parkinsonism is rigidity of limbs, which are resistive to passive movement (cogwheel rigidity).

Bradykinesia (or akinesia) is characterized by a reduction in spontaneous facial movement.

This presents itself as decreased facial expression, a flat monotone voice, decreased arm swing during walking, and an inability to initiate movement.

Acute dystonic reactions are abnormal postures produced by sustained contorting and twisting muscle spasms.

The muscles of the neck and head are most frequently affected.

Symptoms Include:

1. Sustained contraction of the masticatory muscles (trismus)
2. Forceful sustained eye closure (blepharospasm)
3. Facial grimacing
4. Oculogyric spasm (brief fixed stare, followed by upward and lateral rotation of the eyes so that only the sclera remain visible)
5. Dysarthia
6. Dysphagia
7. Glossopharyngeal constrictions
8. Torticollis

Rarely abnormal movements of the limbs, with dystonic arm movements or gait are seen. Although dystonic reactions are generally fairly obvious, mild symptoms may go unnoticed.

Akathesia (literally can't sit still) is characterized by a subjective sense of inner restlessness, mental unease, unrest or dysphoria.

This is commonly accompanied by a characteristic pattern of restless movements including rocking from foot to foot, walking on the spot, and shuffling and tramping of the legs. In severe cases, patients pace rapidly and are unable to sit or lie down for more than a few minutes.

Substantial variation in the course of each EPS has been reported.

Acute dystonic reactions occur most commonly within 12 to 48 hours of initiating or substantially increasing antipsychotic treatment, akathesia typically occurs within a few hours or days of starting treatment, and Parkinsonism usually does not emerge for several days or weeks.

In a much-cited study, Ayd (1961) surveyed 3,775 patients treated with both high- and low-potency **conventional antipsychotic drugs and reported that 38% of the sample developed Acute EPS.**

There appears to have been a steady increase in the prevalence of Acute Extrapyramidal Symptoms (EPS) (Dystonia, Akathisia and Parkinsonism) in the past 30 years.

Anticholinergics are associated with a range of Side Effects including:

1. Dry mouth,
2. Blurred vision,
3. Constipation,
4. Tachycardia,
5. Urinary hesitancy or retention,
6. Erectile dysfunction in men or failure of vaginal lubrication in women (Barnes and McPhillips 1996).

Anticholinergics may also provoke or exacerbate tardive dyskinesia.

Side-Effects from Rapid Withdrawal of Drugs

Rebound Phenomena including:

1. Nausea
2. Abdominal Pain
3. Restlessness
4. Insomnia
5. Akinetic Depression

Have been reported; **following the Rapid Cessation of Anticholinergics.**

Worrying Effect

The most worrying effect of anticholinergics is their impact on cognitive functioning.

Cholinergic blockade produces cognitive deficits similar to those observed in normal ageing.

Anticholinergics may have specific effects on patients short-term memory and their ability to sustain attention.

Long Term Effects

For a long time it has been known that Antipsychotics can cause Tardive Dyskinesia and, in a very few people, sudden death.

Tardive Dyskinesia

Tardive (late onset) dyskinesia is characterized by abnormal oral and facial movements such as sucking or smacking, lateral jaw movements and flicking of the tongue.

It is generally thought that 5% of people treated with typical Antipsychotics will develop these symptoms with each year of exposure to the medicine.

Unexplained Death

Unexplained sudden cardiac death in people taking Antipsychotic Drugs has long been a cause for concern." - Ian Norman, Iain Ryrie, in "The Art and Science of Mental Health Nursing", 2005.

Warning on the Medical Trade Drugs

This article was placed here, to bring to your attention the fact that: Medical Trade Drugs in general produce the same problems that the Medical Trade supposedly intends to treat.

The Medical Trade; never attempts a cure.

The Medical Trade, only attempts treatment.

The ideal patient; (will remain in treatment for the rest of his life) is one which needs to be placed under "Management Treatment" for live, (in other words) from cradle to grave, this is the best, and the ideal patient for the medical trade.

Another important point to mention, is that of the withdrawal from any, and all Medical Trade so-called "medications", which are poisonous drugs.

Thus, importance must be made that there is a method to bring the individual out of these drugs.

But those who have prescribed them, must be the ones who will prescribe a withdrawal plan from these same poisonous and nefast substances, which enrich the Medical Trade, and the Pharmaceutical Industry, and destroys the health of those who take them.

The withdrawal from these Medical Trade Drugs, is normally made by reducing the amount taken, of the last prescribed drug, and slowly reducing the amount ingested.

Warning: Never stop taking any drug which the individual has been taking from a period of longer than 6 months continuously, for if the individual stops taking the drug poison, which the system is by now accustomed to and expects same, the nervous system may produce side effects which are a direct effect from the rapid withdrawal of the poisonous Medical Trade substance.

So never recommend or have any one radically stop, from one day to another the taking of any Medical Trade drug, in order to avoid side effects of which the preceding article gives an example of.

Only after the first drug has been reduced to an insignificant amount does one proceed to do the same with the second earliest prescribed drug, and so fourth.

A Note Concerning the Synthetic Poisonous Medical Trade Pharmaceuticals

If any of the so-called medications or Medical Trade pharmaceuticals are to have any value, they needs to have an effect upon the action of the Emunctories.

These as it is known are poisons, and as such create havoc, throughout the human body system.

Medical Trade poisons commonly called medicines, create the following 3 main defects upon the body:

1. Medical Trade medication create Stasis in the blood, lymphatic and the Emunctory System.
2. Many create Addiction.
3. In general Medical Trade Medication are Poison to the human body system, nearly every Medical Trade Medication causes Nausea, and disturbs the Gastrointestinal System.

The Secondary or Therapeutical Effects of Medicines

"Experience has demonstrated that diseased action may be modified by the exhibition of medicines, and the modifications which are thus produced hare been denominated secondary effects, because they are subordinate to those already described under the name of physiological.

As we take advantage of them in the treatment of diseases, they hare been likewise called therapeutical effects; and there are certain terms in use which refer solely to them, such as: febrifuge, bechic, stomachic, antiseptic, antispasmodic, antiperiodic, deobstruent, antiscorbutic, anodyne, antiarthri- tie, antivenereal, antihysteric, lithontriptic, etc.

It were, however, much better if these terms had been altogether banished from the Materia Medica, since they convey tittle meaning.

To say that a substance is febrifuge gives you no information as to its mode of operation; for bloodletting, emetics, purgatives, sudorifics, blisters, stimulants, sedatives, narcotics, mercurials, and tonics, hare been successfully employed in fever, and deserve, therefore, to be termed febrifuge, notwithstanding that their action on the body is diversified, and in some cases completely opposite.

But these terms are objectionable on another ground; they are not always appropriate. Yon cannot say that sulphate of quinia acts as a febrifuge when fever is not present; nor that opium is an anodyne, when no pain exists.

We ought rather to imitate the naturalist who draws his characters of animals and vegetables from those properties which are constant and invariable, and avoids employing all those which are temporary and accidental.

If it be desirable (and no one can doubt but that it is so) to have some term expressive of the effects which certain agents produce on the body, let that term apply to those effects which are constant and universal; let all phrases of dubious meaning be avoided, phrases that can only be applicable in particular conditions of the body, and not always even then; for sulphate of quinia is not febrifuge in every fever, nor is opium anodyne in all painful affections.

Remedies are not uniform in their influence over diseases: at one time we find them beneficial; at another, the same agents are insignificant and useless, or even absolutely hurtful, apparently under similar circumstances.

In a large proportion of diseases, if not in all, there exists a natural tendency in the constitution to the healthy state, a tendency which constitutes the autocrateia of Stahl, the "vis medicatrix naturae" of Cullen.

In those diseases usually termed malignant (cancer and fungus haematodes, for example), we have no evidence of the existence of such a restorative principle beyond their occasional stationary condition.

Now in most cases our remedies facilitate the removal of diseases only by removing those circumstances that prevent the full operation of this tendency; a cure, consequently, is rather referrible to nature than to the efforts of the practitioner.

Nay, when we see patients recover under the most opposite means of treatment, we can hardly refuse our assent to the observation of the late Sir Gilbert Blane, that in many cases patients get well in spite of the means employed; and sometimes when the practitioner fancies he has made a great cure, we may fairly assume the patient to have had a happy escape.

Of the Operation of Medicines on the Material Causes of Diseases

Substances which act indirectly on the material causes of diseases:

In some instances medicines indirectly remove the effects of a previous disease, which effects, by their reaction, maintain a secondary morbid state.

For example, the bowels may be loaded with depraved secretion, the result of some previous disorder, but which has now subsided; and this secretion may excite a secondary morbid condition of the system.

A purgative may relieve all these symptoms, y removing the cause or reagent.

A medicine seldom produces an amendment in a disease without primarily giving rise to an organic operation in the body affected.

A specific curative power in medicines cannot be demonstrated.

To admit that medicines act on the causes of disease would be to assume that these causes are of a material nature, an assumption which, in 9 cases out of 10, is unwarrantable.

Functional relations — Every portion of the living body requires two conditions to enable it to carry on life:

1. The presence of a certain quantity of arterial blood, of a proper quality;
2. Nervous influence: so that every organ has a functional relation to the vascular and nervous systems; and, therefore, alterations in the quantity or the quality of the blood sent to it, or in the supply of nervous energy, must be attended with corresponding alterations of function.

Now we can modify the condition of the blood by varying the quality of food, and, therefore, in a secondary way, the functions of distant organs become affected.

For example, it is well known that abstinence from vegetable food, and the continued use of salted meats, give rise to an alteration in the quality of the blood, attended with other symptoms, constituting the disease called scurvy: and we know, also, that the blood will resume its healthy character, and the disease be removed, by the employment of fresh vegetables, and citric or tartaric acids.

Sympathetic relation — Sympathy: Medicines sometimes influence morbid actions mediately under circumstances which cannot be referred either to mechanical or functional relations, and, therefore, we are compelled to call to our aid this unknown relation termed sympathy.

Thus purgatives relieve cutaneous disorders and affections of the head; blisters are frequently useful in internal complaints, diaphoretics in affections of the alimentary canal, diuretics in dropsies.

A purgative administered in an affection of the head may give relief in several ways; by evacuating morbid secretions, which may be a source of irritation; by determining blood towards the bowels, and thereby relieving the cerebral vascular system; by influencing the digestive process, and thereby the quality of blood; and lastly, by sympathy." - Dr Jonathan Pereira, MD, FLS in "The London Medical Gazette", 24 October 1835.

The Various forms of Skin-Irritation Due to the Administration of Drugs

"That peculiarity of constitution which, for want-of a better name, we call idiosyncrasy, forms undoubtedly one of the bugbears of therapeutics.

In no given case can we confidently predict that calomel, or quinine, or iodide of potassium will not produce effects very inconvenient to our patients, and not improbably damaging to our own professional credit.

For the public, unmindful or ignorant of the fact that medicine is far from being an exact science, naturally expect their doctors to save them from the unnecessary physiological effects of drugs, the mere swallowing of which is in itself more than sufficient penalty for the accident of sickness.

A large mass of evidence from many authentic sources, as well as the results of our own individual experience, must have convinced us that certain aspects of cutaneous irritation follow the administration of particular drugs with sufficient regularity and definition of form to stand in the relation of cause and effect.

In the following remarks I hope to be able to give, in moderately brief compass, some kind of orderly sketch of the various forms of cutanedus eruption caused by the administration of special drugs.

Passing now to the various eruptions produced by the internal administration of drugs, I shall first lay down, so far as I can, one or two headings of causation, and then run over each substance which has the property of causing any marked cutaneous manifestation.

Secondly, some rashes are due to irritation of certain structures, like the sebaceous glands, through which a particular drug is normally eliminated in part; and others are distinctly of the nature of nettle-rash, depending on stomach-irritation; or the blood-corpuscles may be disorganised or broken up, and we may have purpura.

Defects of elimination may account for a good deal, and it is quite reasonable to hold that, if the principal means of exit for any particular drug are blocked up, we are liable to meet with unexpected excess or irregularity of physiological action.

Thus, we find kidney-disease in many of the recorded cases of bromide-rash; and Brunton and Power (vide Brunton's Goulstonian Lectures, British Medical

Journal, 1877) have experimentally shown that, if digitalis be given until the renal arteries are powerfully contracted, its elimination is checked, and poisonous symptoms may suddenly arise, or, on the contrary, elimination may be too swift to allow the drug time enough to act, and this specially occurs in the case of curare, which is thrown out of the blood so rapidly by the kidneys, that administration by the mouth produces none of those toxic effects which are so well marked when hypodermic infection is employed.

This question of the integrity of the eliminating organs in connection with therapeutics is of vast importance; and, although it has received the attention of Gubler and other eminent men, I recommend it to your attention as a good field for future investigation, counselling you, meanwhile, to consult an interesting paper by Duckworth, "On the Passage of certain Substances into the Urine in Healthy and Diseased States of the Kidney", in the third volume of St. Bartholomew's Hospital Reports.

Finally, we have a class of cases which cannot be explained at all, and which we say are due to idiosyncrasy; and of this we have a good example when we find that a simple small dose of an usually harmless drug brings out the, irritable rash.

With these principles to guide us, then, let us approach the various substances in succession, beginning with arsenic, which, in poisonous doses, causes cutaneous irritation, with an eczematous eruption.

Herpes has also been observed during its ordinary medicinal administration and as it is partly eliminated by the skin, it stimulates that structure, and has a powerful influence over some of its more chronic affections, very injuriously irritating the more acute disorders of an inflammatory nature.

Phosphorus, also, is a cutaneous stimulant, and has been recommended for the purpose of encouraging the insufficiently developed, or prematurely faded, rash of the eruptive fevers; but the only skin affection for which it is primarily responsible seems to be purpura, which occasionally coincides with gastrointestinal derangement and jaundice, in preceding the fatal issue of a poisonous dose.

Defects of elimination, no doubt, must be held responsible for some part at least of these and other untoward results; and this view is borne out by the fact that, in many of the recorded cases of iodide and bromide rash, and more especially of the latter, albumen was detected in the urine: These drugs, as you know, are principally eliminated by the kidneys, and when their functions are partly suspended, the stress is naturally greater on other organs, such as the sebaceous glands, which also have a share, if only a small one, in casting these very diffusible substances out of the body.

And I would suggest that this is also borne out by the common observation, that small doses of both, and notably of the iodide, are much more apt to produce iodism and bromism than large, the larger quantity, in all probability, exercising a more stimulating influence on the kidneys than the smaller; in other words, acting as a diuretic.

Mercury, when pushed up to poisonous limits, brings out an eczematous eruption on the skin; but this is generally an advanced symptom, coinciding with the marasmus and tremors and general nervous prostration which a reckless use of the mineral rendered not unfamiliar to our forefathers, but which, I hope, will always remain a matter of history to you.

These instances of chronic blood-poisoning fortunately are rare; and luckily so, because their frequent occurrence would rather induce us to persuade our patients to abandon chloral altogether, and "rather bear the ills they have than fly to others that they know not of".

We do not hear so much about these effects in Germany, under the influence of the "massive" doses there prescribed to reduce the body-heat; and it may be that the drug, when thus taken wholesale, stimulates the emunctories, whereas the smaller quantity is longer retained, and has therefore more ample opportunity of producing its toxic effect.

Quinine is well known to be very rapidly eliminated by the kidneys, so rapidly, indeed, that good continental authorities hold that, in order to produce its full antipyretic effect, we must get from 40 to 70 grains into the system in divided doses, coup sur coup, within the first half-hour." - By Robert FARQUHARSON, MD, FRCP, Assistant-Physician to and Lecturer on Materia Medica at St. Mary's Hospital, in "British Medical Journal", 15 February 1879.

"In cutaneous diseases benefit may sometimes be gained by the use of medicines which excite the vascular system generally, and which thereby promote the secretion of the skin." - Jonathan Pereira, MD, FLS in "The London Medical Gazette", 24 October 1835.

Chapter 31

The Role of Osteopathy in Emunctology

"Remove all obstructions, and when it is intelligently done, Nature will kindly do the rest." - Dr A.T. Still, MD, DO in "Autobiography", 1897.

"The rule of the artery is absolute, universal, and it must not be obstructed." - Dr Andrew Taylor Still, DO, in "Autobiography of Andrew T. Still With a History of the Discovery and Development of the Science of Osteopathy", 1897.

Osteopathic Manipulation has several roles in Emunctology among them is that it Promotes a Healthy Lymphatic System.

In Emunctology, **Osteopathy is what Dr Andrew Taylor Still created.**

His Legacy is Osteopathy, everything else is debatable, if it is or not part of Osteopathy.

The following two phrases where placed upon the first Diplomas of Osteopathy, and this is what we Emunctologists understand by what Osteopathy is:

Objective

"Osteopathy Teaches, and has for its object, the keeping and maintaining a complete circuit of the forces of the Motor, Sensory and Sympathetic Nerves, to and from the Brain, and all the organs, tissues, blood and other vessels, the bowels and all parts, and the whole of the human system that pertain to nourishment, strength and growth of bone, the skin appendages and soft parts of the body."

Health

"Health is the result of the harmonious action of the system when all parts are unirritated by any cause, such as increased or diminished flow of the fluids of the arteries or veins or the Nerve Force, by partial or complete dislocation of bones, muscles, tissues, membranes or parts of the whole system. The object of Osteopathy is freedom of flow of all electric, of other fluids, forces or substances pertaining to life." - Andrew Tayllor Still, DO 1893.

The Osteopathic Practitioner through the application of the proper Osteopathic Manipulations, using the structural portions of the body as leverage, by its action directly stimulating the secretions through the various physiological activities of

glands and centres and ganglia along the anatomical body system.

With the to bring about a coordination of the activities of the body forces.

Osteopathy Manipulation is the keeping of a balance by touch between the sympathetic and cerebrospinal nervous system.

Osteopathic Manipulation can be used to increase or de-increase blood supply to any given area, and to effect a structural correction.

Osteopathy to Cure Disease

"The Osteopath seeks first physiological perfection of form, by normally adjusting the osseous frame work, so that all arteries may deliver blood to nourish and construct all parts. Also that the veins may carry away all impurities dependent upon them for renovation. Also that the nerves of all classes may be free and unobstructed while applying the powers of life and motion to all divisions, and the whole system of nature's laboratory.

A full and complete supply of arterial blood must be generated and delivered to all parts, organs and glands, by the channels called the arteries. And when it has done its work, then without delay the veins must return all to heart and lungs for renewal. We must know some delay of fluids has been established on which nature begins the work of renewal by increased action of electricity, even to the solvent action of fever heat, by which watery substances evaporate and relieve the lymphatic system of stagnant, watery secretions. Thus fever is a natural and powerful remedy." - Dr Andrew Taylor Still, MD, DO in "Philosophy of Osteopathy", 1899.

> *"The kernel of the osteopathic idea, namely, that of lesion causing disease and its removal causing cure, is totally wanting in every other system. Possessing this open secret of nature, we possess the open sesame to the treasure-house of health." - Dr. Charles Hazzard, DO in "Osteopathic Manipulation of the Blood-Mass", 1904.*

Postural and Other Tensions

"The condition that prevails today because of our high-gear activities is one of extreme nervous, postural, and circulatory tension. Some people are actually tied up in a knot, and they feel better when they are untied.

Even without a definite organic lesion, an Osteopathic Treatment usually Relaxes the entire body. It has a soothing influence.

It overcomes Lymphatic Stasis and Venous Sluggishness, and accelerates the Arterial Circulation.

It is a persuasive sort of treatment, the effects of which are so pronounced that many people who have tried the method much prefer it to drugs, which may also temporarily relax and relieve but usually leave the patient feeling worse afterward." - Dr George S. Weger, MD in "Genesis and Control of Disease", 1931.

The Therapy of Manipulation

"Like some other good things, has an antiquity difficult to measure, and it may be only estimated.

We find, upon investigation, that it was a part of the classical teachings of Hippocrates (460 B.C.), and that in his time they referred it back to the authorities of China and India.

Up to 1870 the literature of Mechano-Therapy was limited to a few magazine articles. The total number of pamphlets which appeared in 1874 was four magazine essays. In 1875 one more, and in 1879 nineteen are found, accredited to the various languages. Within the past ten years only has it been freely discussed.

The Germans have of late placed it on a philosophic basis.

When investigated and approved by such men as Newman, Koch, Richter, See, Blanche, Piorry, Morrell, Lea, and S. Wier Mitchell, it seems to have a secure basis in the future.

Dubois-Reymond has made some recent experiments which give much light to the office of massage, when utilized to aid nature in repair, based upon a physiological law.

He explains how and why passive exercise promotes increased vitality, and hence power of resistance, a condition which has been recognized as a habit of nature from the most ancient records, although the law was undiscovered.

Lister has taught how to confine a local injury or surgical operation to the narrowest limits by antiseptic and aseptic appliances.

He seeks to eliminate external mal-influences.

Massage seeks to prevent the extension of a malady by promoting health in the balance of the body, and thus avert a local ill from becoming a constitutional one." - A. Comstock, MD in The Therapeutic Gazette", 1888.

"An osteopath reasons from his knowledge of anatomy" - Dr. Andrew Taylor Still, DO in "Osteopathy, Research and Practice", 1910.

"Osteopathy is that science which consists of such exact, exhaustive and verifiable knowledge of the structure and function of the human mechanism, anatomical, physiological and psychological, including the chemistry and physics of its known elements, as has made discoverable certain organic laws and remedial resources, within the body itself, by which Nature under the scientific peculiar to Osteopathic Practice, apart from all ordinary methods of extraneous artificial or medicinal stimulation, and in harmonious accord with its own mechanical principles, molecular activities and metabolic processes, may recover from displacements, disorganisations, derangements, and consequent disease, and regain its normal equilibrium of form and function in health and strength." - Dr Andrew Taylor Still, MD, DO

*"**Osteopathy is a Therapeutic gold mine.** Many veins of high grade ore have been found, and are being worked; but others just as valuable are yet to be discovered" - Dr C.B. Rowlingson, DO, in "The Western Osteopath".*

Concerning Osteopathy

The books on Osteopathy are all those written by its founder Dr A. T. Still, MD, DO.

The books containing the Teachings of Osteopathy, are only those books who: confirm, elaborate, develop, explain in accordance to the foundations of the; Teachings, Ideas and Methods of application of the Osteopathic Science, has laid down in writing, in the books of Dr Andrew Taylor Still, MD, DO.

All books not written by Dr A. T. Still, on the subject of Osteopathy are accepted as commentaries on Osteopathy.

Therefore anyone who claims to be an Osteopath, need to know Who Is the Author of their Osteopathy.

Osteopathy Fully Explained

"Dr Still, the founder of Osteopathy, saw the great necessity for another department in the healing art. He found in his extensive practice that there were a large class of cases where medicine was useless and where surgery did not apply.

The result of Dr Still's observations and experimental work demonstrated beyond question that many diseases of the different organs and parts of the body had their cause in a displaced or contracted part, which resulted in an obstruction to the free and natural flow of the fluids and forces from and to those parts, and also that these displacements and contractions could be found and removed, and with their removal nature would restore to perfect health.

A slight slip of a vertebra, a contracted condition of the ligaments which bound one of the spinal bones to its fellow, caused an impingement upon the nerves and vessels which were given off from the spinal cord, and as a result the energy from the brain was cut off or obstructed, and the organ supplied by that nerve received only a part of its normal amount of energy and nourishment.

Osteopathy may place the entire body in perfect condition (in terms of both muscle and bone skeleton physiological anatomy). When the cause is not in the organs themselves, but in the physical structure of the body.

The nerve centres which control the blood and nerve supply to these parts are located along the spine. And here most of the trouble lies.

Eyes - Osteopathy has accomplished wonderful work in the treatment of the eyes. It has taken glasses off of many hundreds of people.

A strained eye, like a strained arm, has a disturbed circulation which, when corrected, renders the action perfect." - in "Osteopathy Fully Explained", 1903.

The Emunctory System

"Dr. Leonard Williams agreed that gastro intestinal catarrh might be one factor in the production of increased toxicity of the bowel; there were certainly others in operation. One was an excessive amount of meat eaten. Appendicitis had been increasingly frequent as the price of meat foods lowered. Another was the increased amount of work thrown upon the intestinal canal by the neglect of the other Emunctories. Much of the work intended to be done by the skin was thrown upon the bowel. Appendicitis was not common in those whose skins were active." - in "The British Medical Journal", 30 December 1905.

Function & Effects in Health and Disease

"We want to avoid the use of the knife and saw as much as possible.

We must be patient, and use freely a skillful knowledge of physiology, remembering all the time that cures come only as a result of physiological action after the most skilled surgeons of this and past ages have done their best work.

We do not expect or even hope to improve on the skilled arts of surgery in amputations and other legitimate uses of the knife and saw; but we do hope to understand the forms and functions of the parts of the human body to a saving degree of knowledge, and apply that knowledge in such a skilful manner that abnormal conditions demanding the use of the knife will not occur, such as tumours on and in the body, or stones in the bladder and gall-sac, which form when some function fails to keep lime and chalk and other substances in solution as Nature intended they should be while in the circulation.

If we can come to the rescue by producing better drainage through the veins and excretory channels, we prove our ability as surgeons by using Nature's knife in place of the surgical knife of steel. Growths in the abdomen, such as tumours, only form when some channel of drainage is shut off.

If we wish to stop or remove a growth of any organ in the abdomen, we must line up the body in good form for the appropriation of the arterial blood by the organ to which it was sent out by the heart; then fix all the vessels of drainage, turn the nerves loose, and the work will be done.

Too much use has been made of the knife, and too little trust placed in Nature.

The knife can be seen.

Nature is known only by the power of the gift of reason well applied.

The knife, gets larger rolls of cash for its work than the pills; also the grave and heaven get more men and women - that is, if they have plenty of money to pay for their ride.

Poor people seldom have tumours or appendicitis, because the doctor finds he can attend them without the knife. I tell you that it is the wealthy who generally get the deadly knife.

Disease Defined

When we use the word “disease”, we mean anything that makes an unnatural showing in the body - overgrowth of muscle, gland, organ, physical pain, numbness, heat, cold, or anything that we find not necessary to life and comfort.

I have no wish to rob surgery of its useful claims, and its scientific merits to suffering man and beast.

My object is to place the osteopath's eye of reason on the hunt of the great "whys" that the knife is useful at all.

It comes in often to remove growths and diseased flesh and bone that have formed owing to man's ignorance of a few great truths.

If blood is allowed to be taken to a gland or organ, and not taken away in due time, the accumulation will become bulky enough to stop the excretory nerves and cause local paralysis.

Then the nutrient nerves proceed to construct tumours, and on and on until there is no relief but the knife or death.

Had this blood not been conveyed there, it would not be there at all, either in bulk or less quantities. Had it simply done its work and passed on, we would have had no material to develop such abnormal beings.

If a tumefaction appears in one side and not in the other, why is it on one side and not on the other?

It takes no great effort of mind to see that the veins did not receive and carry off the blood, and a growth was natural, as the conditions would not permit anything else and be true to Nature.

Thus man's ignorance has made a condition for the knife.

Had he taken the hint and let the blood pass on when its work was done, he would not have had to witness the guillotine taking his patients, whose early pains told him a renal vein or some vessel below the diaphragm was ligated by an impacted colon, or that a few ribs were pulling and bringing the diaphragm down across the vena cava and thoracic duct, causing excitement or paralysis of the solar plexus, or any other nerves that pass through the diaphragm, through which also passes blood to and from the heart and lungs.

How to find causes of diseases or where a hindrance is located that stops blood is a great mental worry to the osteopath when he is called to treat a patient.

The patient tells a doctor “where he hurts”, how much “he hurts”, how long “he has hurt”, how hot or cold he is.

The medical practitioner then puts this symptom and that symptom in a column, adds them up according to the latest books on symptomatology, and finally he is able to guess at a name by which to call the disease.

Then he proceeds and treats as his pap's father heard his granny say their old family doctor treated “them sort of diseases in North Carolina”. An Osteopath, in his search for the cause of diseases, starts out to find the mechanical cause. He feels that the people expect more than guessing of an Osteopath.

He feels that he must put his hand on the cause and prove what he says by what he does; that he will not get off by the feeble-minded trash of stale habits that go with doctors of medicine.

By his knowledge he must show his ability to go beyond the musty bread of symptomatology.

The Lymphatics

A student of life must take in each part of the body and study its uses and relations to other parts and systems.

We lay much stress on the uses of blood and the powers of the nerves, but have we any evidence that they are of more vital importance than the lymphatics?

If not, let us halt at this universal system of irrigation, and study its great uses in sustaining animal life.

Where are the lymphatics situated in the body?

Where are they not found?

No space is so small that it is out of connection with the lymphatics, with their nerves, secretory and excretory ducts.

The system of lymphatics is complete and universal in the whole body.

After beholding the lymphatics distributed along all the nerves, blood-channels, muscles, glands, and all the organs of the body, from the brain to the soles of the feet, all loaded to fullness with watery liquids.

We certainly can make but one conclusion as to their use, which would be to mingle with and carry out all impurities of the body, by first mixing with the substances and reducing them to that degree of fineness that will allow them to pass through the smallest tubes of the excretory system, and by that method free the body from all deposits of either solids or fluids, and leave nourishment.

Possibly less is known of the lymphatics than any other division of the life-sustaining machinery of man. Ignorance of that division is often equal to a total blank with the operator.

Finer nerves dwell with the lymphatics than even with the eye.

The eye is an organized effect, the lymphatics the cause, and in them the principle of life more abundantly dwells.

No atom can leave the lymphatics in an imperfect state and get a union with any part of the body. There the atom obtains form and knowledge of how and what to do.

The fluids of the brain are of a finer order than any fluids supplying the whole viscera. By nature, coarser substances are necessary to construct the organs that run the blast and rough-forging divisions.

The lymphatics prepare, furnish, and send the atoms to the builder that he may construct by adjusting all according to Nature's plans and specifications.

Nature makes machinery that can produce just what is necessary, and, when united, produces what the wisest minds would exact.

The lymphatics are closely and universally connected with the spinal cord and all other nerves, and all drink from the waters of the brain.

By the action of the nerves of the lymphatics, a union of qualities necessary to produce gall, sugar, acids, alkalies, bone, muscle, and softer parts, is brought about so that elements can be changed, suspended, collected, and associated and produce any chemical compound necessary to sustain animal life, wash out, salt, sweeten, and preserve the being from decay and death by chemical, electric, atmospheric, or climatic conditions.

By this we are admonished in all our treatment not to wound the lymphatics, as they are undoubtedly the life-giving centers and organs, and it behooves us to handle them with wisdom and tenderness, for by and from them a withered limb, organ, or any division of the body receives what we call a "reconstruction", or is builded anew.

Without this cautious procedure, your patient had better save his life and money by passing you by as a failure, until you are by this knowledge qualified to deal with the lymphatics.

Why not reason on the broad plain of known facts, and give the cause of a person having complete prostration.

When all systems are cut off from a chance to perform and execute such duties as Nature has allotted to them, we have prostration.

Motor nerves must drive all substances to and sensation must judge the supply and demand.

Nutrition must be in action on time, and keep all parts well supplied with power, or a failure is sure to appear.

We must ever remember the demands of Nature on the lymphatics, liver, and kidneys.

They must work all the time or a confusion will result, and a deficiency in the performance of their duties will mean a crippling of some function of life over which they preside.

Universally Distributed

Dunglison's definition of the lymphatics is very extensive, comprehensive, and right to the point for our use as Doctors of Osteopathy.

He describes the lymphatic glands as countless in number, universally distributed all through the human body, containing vitalized water and other fluids necessary to the support of animal life, running parallel with the venous system, and more abundantly there than in other locations of the body, at the same time discharging their contents into the veins while conveying the blood back to the heart from the whole system.

Is it not reasonable to suppose that, besides being nutrient centers, they accumulate and pass water through the whole secretory and excretory systems of the body, in order to reduce nourishment from a thick to a thin constituency, that it may easily pass through the tubes, ducts, and vessels interested in the distribution of materials as nourishment first, and renovation second, through the excretory ducts.

The question arises, Whence cometh this water?

This leads us back to the lungs. With a fountain of life-saving water provided by Nature to wash away impurities as they accumulate in our bodies, would it not be great stupidity in us to see a human being burn to death by the fires of fever, or die from asphyxia by allowing bad or dead lymph, albumen, or any substance to load down the powers of Nature and keep the blood from being washed to normal purity.

If so, let us go deeper into the study of the life-saving powers of the lymphatics.

Do we not find in death that the lymphatics are dark, and in life they are healthy and red?

What we meet with in all diseases is dead blood, stagnant lymph, and albumen in a semi-vital or dead and decomposing condition all through the lymphatics and other parts of the body, brain, lungs, kidneys, liver, and fascia.

The whole system is loaded with a confused mass of blood that is mixed with unhealthy substances that should have been kept washed out by lymph.

Stop and view the frog's superficial lymphatic glands.

You see all parts move just as regularly as the heart does.

They are all in motion during life. For what purpose do they move if not to carry the fluids to sustain the building-up processes, while the excretory channels receive and pass out all that is of no farther use to the body?

Now we see this great system of lymphatics is the source of construction and purity. If this be true, we must keep the lymphatics normal all the time or see confused Nature in the form of disease.

We strike at the source of life and death when we go to the lymphatics.

Erysipelas

This philosophy knows no life nor death except through the motion of the blood and the inaction of that fluid, which contains life while in motion and death as the effect of motion ceasing.

Without giving in detail the divisions and bones of the head, I will say, in considering the subject of diseases of the head, that the head is composed of hard bones covered with soft flesh and filled with brain, blood, nerves, and membranes.

It has divisions to suit the functions of the inner chamber of the cranium or skull.

On the under side or surface of the skull there are many holes, foramina, or openings, to accommodate the blood-vessels and other structures that supply and drain the brain.

On the outside of the skull the head is covered with soft substances, skin, fascia, muscles, nerves, veins, secretives, and excretives.

This human head shows many effects, diseases, whose cause can be traced to lack of nourishing blood-supply, to poor drainage and exhausted fluids, which should be returned through the venous or thrown out through the excretory system.

With this known fact and your knowledge of anatomy, I think you are very well qualified to answer the question: What is the cause of erysipelas, with its fiery swelling which spreads over the skin of the face and scalp of the head, to the complete occupation of both?

Here is a detention of blood, detained long enough to cause what is commonly known as erysipelas of the head and scalp.

That visible effect is a result of an action known as fermentation of the fluids that should have passed from the veins and membranes of the scalp, the fascia, lymphatics, and cellular system of the head and face.

When I ask you where and how the blood is conveyed from the face back to the heart, you will describe the blood-vessels that empty into the jugular veins, internal and external, giving a short enumeration of the external veins of the face, the facial, the temporal, the angular, the transverse nasal, the frontal, post-auricular, and occipital, which empty into the external and internal jugular.

The failure or stoppage of blood that has caused this facial erysipelas can easily be traced to the large veins that should keep the face thoroughly drained.

You see where the trouble is, and by that knowledge know that you must assist the obstructed drainage to the normal. Then your labour is done; the arterial and venous energies will take care of the necessary drainage and repair.

When erysipelas attacks the nose only, your work is directed to the facial and nasal veins.

Should the erysipelas localize itself between the ear and occipital region, your work would be to encourage the discharge of venous blood through the auricular and occipital veins.

Should the tongue be swollen, your treatment would extend to the lingual, superior thyroid, and anterior jugular veins.

By this method we obtain reduction of bulky deposits and swellings of the face, and know that normal action will follow judicious renovation.

The student will ever remember that no action can be suspended in the arterial supply and venous drainage of the face and scalp and not leave visible marks by such failure.

The inquirer for information would naturally ask the question, "Why do the osteopaths want the excretory system to throw water on the consuming fire?"

Let me call your attention to the fact that you should know, as physiological reasoners, that phosphorus with oxygen and surface air, assisted by nerve-and blood-motion, aided by electricity, produces a union between the oxygen and phosphorus, and the addition of nitrogen, which occupies much cellular space in the body, produces the combustion known as fever heat, and that phosphorus ceases to unite with anything whilst submerged in water from secretory and excretory ducts of the system.

At that time it brings forward all the solvent qualities and applies them, with the assistance of the motor force, to driving out all irritating substances through the bowels, the lungs, and the porous and excretory system. Electricity is called in as the motor force to be used in expelling all unkindly substances.

By this effort of Nature, which is an increased action of the motor nerves, electricity is brought to the degree of heat called fever, which, if better understood, we would possibly find to be the necessary heat of the furnace of the body to convert dead substances into gas, which can travel through the excretory system and be thrown from the body much easier than water, lymph, albumen, or fibrin. Suppose it should start the yeast, or kind of substance that lives mainly upon lime.

If this yeast, in its action and thirst for food to suit its life and appetite, should call in from the earth, water, and atmosphere for its daily food lime substances only, and by its power destroy all other principles taken as nourishment, is it not reasonable to suppose it would deposit such elements in overpowering quantities in the fascia of the mucous membrane of the lungs, so as to overcome the renovating powers of the lungs and excretory system?

This deposit acts as an irritant to the sensory nerves to such an extent that the electricity of the motor nerves is forced to take charge of and run the machinery of the human body, with a velocity sufficient to raise the temperature of the body, by putting the electricity above the normal action of animal life, and thereby generate that temperature known as fever.

The two extremes, heat and cold, may be the causes of retention and detention. One is detained by the contraction of cold until the blood and other fluids die by asphyxia.

The warm temperature produces relaxation of the nerves, blood, and all other vessels of the fascia, during which time the arteries are injecting too great quantities of fluids to be renovated by the excretory system.

Then you have a cause for decomposition of the blood and other substances. You have a logical foundation and a cause for all diseases, catarrhal and climatic, contagions, infections, and epidemics. The fascia proves itself to be the probable matrix of life and death. When harmonious in normal action, health is good; when perverted, disease results.

That gas is generated in the stomach and intestines, and we are led to believe so because we know of no other place in which it can be made and thrown into the stomach by any tubes or other methods of entry. Thus, by the evidence so far, the stomach and bowels are the one place in which this gas is generated.

I have spoken of the stomach that generates and ejects great quantities of gas for a longer or shorter time after meals. This class of people have been called dyspeptics.

Another class of the same race of beings stand side by side with him without this gas generating. They, too, eat and drink of the same kind of food, without any of the manifestations that have been described in the first class.

Why does one stomach blow off gas continually while the other does not?

As No.2 throws off no gas from the stomach after eating, is this conclusive evidence that his stomach generates no gas?

Or do his stomach and bowels form gas just as fast as No.1, and the secretions of the stomach and bowels take up and retain the nutritious matter and pass the remainder of the gas by way of the excretory ducts through the skin?

If the excretory ducts take up and carry this gas out of the body by way of the skin, and he is a healthy man, why not account for the other one's stomach ejecting this gas by way of the mouth, because of the fact that the secretions of the stomach are either clogged up or inactive, for want of vital motion of the nerve-terminals of the stomach.

Another question in connection with this subject, Why is the man whose stomach belches forth gas in such abundance also suffering with cold feet, hands, and all over the body, while No.2 is quite warm and comfortable, with a glow of warmth passing from his body all the time?

With these hints I will ask the question, What is digestion?"

The Philosophy of Digestion

All digestion is the result of electric shocks, sent forth from the brain by way of the motor system of nerves. Such shocks are in perpetual motion from the center of the earth to the soul of the surface. Not only do these shocks tear asunder all substances found in the alimentary channel, but they impart, inject, and associate a moving principle, called vitality. Yet it is only vital to the work of decomposition, selection, and association for the purpose of forming flesh, muscle, sinew, hair, teeth, and bone. The different qualities found in the fluids of the different localities, such as brain, liver, and kidneys, are effects of those living shocks.

The same law is just as applicable in reason and as true in effect in creating and imparting odours to the various glands in the whole system.

The heart, being the centre electro-motor engine, at every vibration is regulated by the velocity demanded to modify and keep the electric battery or the brain supplied with electricity to the normal capacity to supply the electro-motor, without which some degree of failing weakness is perceptible by beholding sluggish action and abnormal quantities of deposits in some or all parts of the cellular system of the lungs, heart, stomach, bowels, uterus, lymphatics of the fascia, and system generally."

The medical doctor has, owing to a lack of knowledge of the true causes of diseases, combated effects with his remedies.

He treats pain with remedies to deaden pain; congestion by an effort to wash out overplus of blood that has been carried to parts or organs of the body by arteries of blood and channels of secretions, and not taken up and passed off and out by the excretories. He sees the abnormal sizes and leaves the hunting of the cause that has given growth to such proportions, and begins to seek rest and ease for his patient. Then he calls on medicine to carry the waste fluids to the bowels, bladder, and skin, with tonics to give strength, and stimulants to increase the action of the heart, in order to force local deposits to the general excretory system.

At this time let the osteopathic doctor take a close hunt for any fold in the muscles of the system that would cut off the normal supply of blood, or suspend the action of nerves whose office is to give power and action to the excretory system sufficient to keep the dead matter carried off as fast as it accumulates.

The Lesson of the Tree

The life of the living tree, is in the bark and superficial fascia which lies beneath the bark.

The remainder of the tree performs the duties of secreting.

Its excretory system is first upward from the surface of the ground.

It washes out frozen impurities in the spring, after which it secretes and conveys substances to the ground through the trunk of the tree to the roots, like unto a placenta attached to Mother Earth, qualifying all substances of fibre and leaf of the part of the tree above the ground.

A Great Host

We will look over the abdominal field, count the host, and try to be as systematic as possible.

We will begin at the diaphragm, the wall that separates the thorax from the abdomen.

The abdomen contains the liver, spleen, pancreas, stomach, two kidneys, the bladder, small and large intestines, the omentum, abdominal aorta and vena cava, the blood-supply for the whole system of abdominal organs, the lymphatics with all secretory and excretory organs, and all there is found on to the pelvic floor.

All the organs of the territory of the abdomen must be kept before the eye, and we must feel that we are in the presence of perfection of all organs.

The seventh will contain the bladders, ureters, and the general system of collecting and excreting lifeless fluids through the excretory channels.

The ovaries and nerve-and blood-supply of the generative system are the eighth course.

The first very large dish will contain the greater and lesser omenta; the second, third, and fourth will contain the different divisions of the mesentery, beginning with the meso-caecum, mesotransversalis, meso-colon, and mesorectum.

The mesentery is shown by examination to be made of very strong and elastic substances, supplied with blood-vessels, lymphatics, and secretory and excretory systems, with nerves to suit its functioning process.

We also find its attachments to the spine and bowels to be very extensive, extending many inches in length, about four to six up and down the anterior surface of the spinal column, beginning with the second lumbar.

Its attachment at the other extremity from the spine is to the bowels. The small intestine attachment is very extensive.

Harmony Must Exist

We will say to the student of the philosophy of diseases of the abdomen and their remote, active, and present causes, that he is better prepared to take up the subject of diseases of the many or few organs of the abdominal viscera if he knows what is meant by disease of the organs of the abdomen, pelvis, and chest.

All these organs must work in perfect harmony to produce health.

Health requires the continuous action of every organ, all nerves, all blood-vessels, all lymphatics, all the secretory system, and all the excretory system, in order that when the united products are thrown into the thoracic duct or any other duct that conveys lymph or any other fluid, they will be conveyed to the lungs.

It is reasonable that this fluid, from the many thousands of cells and channels through which it is passed, will become as a unit.

In order that health may be perfect, every drop of fluid must be conveyed from the lower bowels, beginning with the rectum, ascending through the sigmoid and up the left side of the abdomen, through the descending colon and transverse colon and down to the iliac fossa, which is the normal position allotted to the caecum.

Reason will teach you at once that each drop of lymph or venous blood coming from the whole system of the large bowels, and absorbed by the mesentery and conveyed through that system to the thoracic duct, must be absolutely and chemically pure, or disease will mark the amount of variation caused by the amount of impurities that are taken up by the mesenteries of any division, from the rectum to the ileocaecal valve.

An Obstruction

The importance of a knowledge and a very thorough knowledge of the form and place, the function and object of the productive ability, application, and use of the fluids necessary to the production of good health is apparent.

If after this preparation is completed by the lungs and we have good blood, any diseased condition of the viscera of the pelvis or thorax should appear, in the form of thickening of the membranes, congestion, thickening, or tumefaction of any organ or its appendages, then we have a positive witness that a lymphatic duct, an excretory duct, or a venous duct is stopped by the ligation of its channel by constriction, weight, or a cramp, or from pressure of bone or muscle, preventing the passage of the fluid that has been detained and has given size and form to this abnormal tumefaction found adjacent to some gland.

All interferences are labelled to your understanding at once, by enlargement through stoppage of fluids which ferment, inflame, and produce erysipelas and other manifestations of inflammations.

The same method of reasoning will enable the doctor of osteopathy to prove to his understanding and satisfaction that acute and chronic dysentery have origin

and continuation from these obstructing causes.

The same method of reasoning is just as good in typhoid dysentery.

The genius of Anatomy and Physiology, with any ordinary amount of mechanical skill, will see by all methods of reasoning that the caecum, the sigmoid, and the small intestine are ditched into the pelvis, pressing and compressing the nerves, veins, and arteries that should at all times be free to act normally, or congestion, inflammation, and sloughing away of the mucous membrane of the bowels, with blood, lymph, and other substances, will follow.

This disturbance will produce irritation of other glands, through the nervous system, and cause those irritated organs to unload their diseased substances into the lymphatic and nervous channels and convey this confused and poisonous mass of fluid back to the lungs from the whole alimentary canal, the bladder, the uterus, the kidneys, the liver, the spleen, the pancreas, and by this physiological and chemical manifestation you can easily account for variation in temperature known as the hot and cold stages that accompany typhoid and other classes of fevers.

Such fungous growths as microbes, germs, bacteria, parasites, and so on to all abnormal formations, are reported to have been found in the bodies of the sick by many authors, as results of their investigations of the compounds in the blood, sputa, and stools of the sick.

We will not dispute the fact that they have been and often are found in the blood, sputa, and faecal and other substances of the body.

We will willingly admit that they are truths as reported as the results of discoveries made by many of the most learned and painstaking scientists of years of the past and of the years of our own day and generation.

That the student may the better comprehend my object, I will admit and agree that such organisms as described are found in lung disease, disease of the stomach, bowels, liver, kidneys, or any organ of the system.

I do not wish to disprove their existence, but wish to take such witnesses and try to prove that all such abnormal changes have a cause in suspension of arterial or venous blood, or lymph, the excretory systems, or by their nerve-supply being cut off at some important point of the physical work.

A clean shop is just as necessary to good work as the skilled mechanic is to the construction of the part desired.

A careful hunt for the broken link that has allowed the chain of life to fail to make the work complete throughout, and let life substances spoil in the blood or lymph before it has been used in the place or purpose for which it was designed, must be instituted. I want to impress upon you that all bad sputa, poor lymph, and defective blood are effects only, and a broken link is the cause, and bacteria are only the buzzards formed by the biogen that is in the dead blood itself.

We have a known cause, in reason, for so-called kidney diseases. We feel we have proven the frequent and even common occurrence of “wreckage” of the bowels, bladder, and womb, held down by contracture of the abdominal wall, the weight of the bowels with their contents, the womb and its congested body, and all

attached membranes and fascia, with the added weight of congestion caused by detained venous blood.

Further wreckage continues by interference with the arterial blood, which is stopped from reaching its natural landings. Another consequence is a great enlargement of veins, lymph-cells, cysts, and tubes of receipt and distribution.

The excretory channels also become shocked and confused as effects of the first pelvic wreck.

From that confused pile of wreckage, we can easily account for the formation of tumors on the uterus, bladder, rectum, and for all diseases of the abdominal viscera, such as tuberculosis of the bowels, kidneys, liver, pancreas, and spleen.

All these effects are possible, all are reasonable, and all are indisputable effects that follow wreckage of the organs of the abdomen.

Have we a functional derangement from nerve disturbance that would cause the lymphatics to reverse their action of construction and throw albumin, fibrin, and watery fluids into the excretory ducts and destroy life by an exhausting drainage?

Then we would be face to face with dyspepsia, dropsy, enlarged spleen, engorged liver, cancer, gallstones, skin eruptions, change of colour, constipation, inflammatory diseases, and ulceration of the stomach, bowels, kidneys, and the uterus.

If we have observed the perfect, harmonious work of health, we are now prepared to adjust the machinery of life by taking all embarrassments from blood - and nerve - supply that are caused or could be caused by strains, jars, and nervous shocks or wounds that are produced by change of season, climate, and physical injuries of all kinds, be they great or small.

Your work is completed when you have adjusted the human body to the degree of perfection in which the God of Nature left it.

Also adjust the mesentery in all its attachments both to the large and small intestines, and give freedom to the ileo-caecal valve, that the softening fluids may pass without delay into and through the colon.

By so doing, we set at liberty and give freedom to the blood- and nerve-supply of the uterus, ovaries, and Fallopian tubes.

We also take all pressure off the nerves which govern the uterus and venous motion of blood from the pelvis and through the whole uterine system of blood, nerves, and lymphatics, in the hope that proper reduction of uterine growths may be the result following excretory action of the uterus and its normal functioning process; also that the hardening faeces may be softened and passed out with the assistance of the fluids penetrating the colon after being set free from the small intestine after passing the ileo-caecal valve in the colon.

This treatment should be followed every 2 or 3 days until the abdominal viscera become normal in action and abnormal bulks have passed away through the universal excretory system of the abdomen, with all of which you are well acquainted by your knowledge of anatomy and physiology.

Don't fail to persevere in well-doing.

If gas should be retained in the system by the excretory ducts, closing the porous system, it would cause irritation of nerves and increase the heart's action to such a degree that the temperature would be raised to a fever heat by the velocity with which electricity is brought into action.

Electricity is the force that is naturally required to contract muscles and force gases from the body.

Let us advance higher in the scale until we arrive at the condition of steam, which is more dense than gas.

Would it not take more force to discharge it? By the same rule of reasoning we find water to be much thicker as an element than either gas or steam.

Then we have lymph as another element, albumin, fibrin, with all the elements found in arterial and venous blood, all of which would require forces to circulate them, pass them through and out of the system.

Should an osteopathic doctor come in contact with a case of smallpox, with the rash just breaking out, would you recommend any medicines, palliatives in the drug line, in the treatment? I would not.

His remedies would be confined to the nerves of the excretory system, which have proven to be all that is necessary. Our success without drugs has been very satisfactory in all cases treated and reported.

In all cases of smallpox that I met in my practice in the sixties and treated with medicine, I could give only temporary relief by opiates. I then believed that there was danger in stopping the fluids in the system by sedatives. Diuretics alone seemed the best of all. Fermentation of fluids seemed to be the dangerous condition to be avoided by a doctor of medicine or in any other system of relief.

I often think that death comes from poison absorbed from diseased gases generated in the system.

When the fluids of the body are formed, they are chemically pure, full of life, and should pass out and on for uses for which they are designed.

No delays can be tolerated after they are prepared for use.

It is only reasonable to look for fermentation of fluids if delayed too long in the cellular system of nerves, of fascia, or other parts or organs of the system.

Thus death follows shocks to the cellular system from any cause.

A closing of cells with their fluids holds their contents, and this is followed by fermentation.

To ferment any substance will cost the life of all substances that are fermented, their organic life as such giving place to the gases that are produced by fermentation.

Thus a complete vital change appears in all substances that ferment.

A collapse of cells comes with fermentation, which fills cells to the point of rupture and deposits gas in the fascia to be passed out by the porous system.

A failure to exit through the skin is followed by eruptive inflammation - thus a pock. I think we can reason fairly correctly when we begin with the lungs and trace the poisonous seeds, fumes, or gases of smallpox as they are inhaled by the

lungs, taken into the air-cells of the lungs, where the nerve-terminals in the mucous membrane, with open mouths, receive and convey nutrition to the nerve-cells for their action and uses.

If the terminals receive pure food, good work will naturally follow; but if food has poisons instead, then Nature would not be true to itself if it did not build diseased conditions of diseased matter.

Thus we know how and why the pock is builded of diseased matter.

A little leaven leaveneth the whole lump.

This leaven was conceived in the lungs and became the champion over life by distributing the leaven through the whole system or lump, beginning with the air-cells of the lungs and ending with the cells of gas, fat-cells, and lymphatic cells of the system, the nerves, blood-supply of the superficial fascia, and the cellular system of blood-and nerve-supply of the skin that covers the entire body.

Thus we see a little yeast has been magnified and added to.

The system has gone through its deadly ferment.

All this we know before we understand how to treat the disease successfully.

If we know where the cut-off is, then we are at ease as to what to do to let out dead fluids, even after the eruption has appeared, and know how to do it.

All fluids are conveyed through the body by arteries, veins, lymphatics, and excretory and secretory ducts.

Thus it is ready to enter and proceed successfully with its deadly war with all that is vital in the human system.

As it lives upon vitality and must be deposited in the most vital parts of the system for development, we see as a result that it consumes this vitality in the whole system, and the effect is what we call death.

There is no doubt about the fact that if the excretory system of cells, glands, and lymphatics is greatly impeded in throwing waste fluids of the body, accumulation follows, then fermentation, with inflammation added to congestion and fermentation.

By this time all the cells are filled with dead matter, fluids, and gases.

All glands of the body become loaded with inflamed fluids and are burning with fever; then all lymphatics and nerves of the superficial fascia and its blood-vessels and porous systems are overcome by irritation and pressure by the bulky deposits in the superficial fascia; then follows the preparation to get this dead pus out of the fascia.

To do this, the excretory ducts must be enlarged. Boils form in the skin and rot out holes to drain the fascia where the great mischief of smallpox is done.

After killing the fluids by retention in the fascia of the skin, a still greater force is created by injury to the nerve-fibers of the fascia.

Then the motor energy appears, and all the powers of life combine to help the arteries force the fluids through the skin and push them to the fascia of the skin to be eliminated. In some parts elimination fails; such places are called pocks.

They suppurate and drop out, leaving a pit, the pock-mark.

Now had the nerves of the skin and fascia not been irritated, contracting the

skin in opposition to the fascia passing its dead fluids through the excretory ducts of the skin, we probably would have had no eruption, Is it not quite reasonable to conclude that after the heart overloads the fascia and the nerves lose their control by pressure of fluids, all that is left is chemical action to the production of pus, which throws it out of the fascia in intervening spaces?

Then, should the fascia have greater destruction of its substances, we have one spot running into others, and we have "confluent smallpox".

If we understand the physiological processes of the preparation of substances, which when prepared are taken up and delivered to their proper places, and if we understand when those substances have supplied the natural energies and when they are placed into excretory ducts and carried away, then we are on the right line of reason, as engineers of the human body, to keep down unnatural deposits". - Dr Andrew Taylor Still, DM, DO, in "The Philosophy and Mechanical Principle of Osteopathy", 1902.

The Emunctories

"As heat and motion have much to do as remedies, we may expect fever and pain until nature's furnace produces heat, forms and converts its fluids into gas and other deposits, and passes them through the excretories to space, and allows the body to work normally again.

No Time for Surrender

This is not the time for the brainy Osteopath to run up the white flag of defeat and surrender.

Open the doors of your purest reason, put on the belt of energy and unload the sinking vessel of life.

Throw overboard all dead weights from fascia and wake up the forces of the excretories.

Let the nerves all show their powers to throw out every weight that would sink or reduce the vital energies of nature.

Give them a chance to work, give them the full nourishment and the victory will be on the side of the intelligent engineer.

Never surrender but die in the last ditch.

The lung of man, too, is in the shade, and surely like the clouds have much to do with the air which contains both gases, which compose water and other elements of life.

With my power of reasoning, if the lungs do not generate water and supply the human system through the secretions to sustain life, and keep the body clean and healthy by the excretories, I am at a loss to know why so much wind is taken into the body just to blow out.

One would say we live by the wind, and to cut it off we die.

At this point I will ask the question: Where and how do fishes get their wind?

If they can live on oxygen and hydrogen when united in the form of water, is not this the strongest conclusion we can come to that the lungs generate water of a purer quality than is found in the running brooks or ocean?

Combatting Effects

In all ages, the Doctor has for lack of knowledge of the true cause of diseases, combatted effects with his remedies.

He treats pain with remedies to deaden pain; congestion to wash out overplus of blood that has been carried to parts or organs of the body by arteries of blood and channels of secretions and not taken up and passed out and off by the excretories.

He sees the abnormal size and leaves the hunting of the cause that has given growth to such proportions and begins to seek rest and ease for his patient.

Then he treats to reduce by medicine to carry the waste fluids to bowels, bladder and skin, with tonics to give strength and stimulants to increase the action of the heart in order to force local deposits to the general excretory system.

How a Purgative Acts

Nature's method is simple and easily comprehended in delivering purgative medicines, with their softening powers to dry constipated faecal matter.

For instance: We would give a purgative in the shape of salts, rhubarb and other substances of choice.

The first question of the physician is how is this to pass through so densely packed substance or faecal matter which is in the bowels?

At this time we will be short in the statement.

The purgative poisons are taken up by the the secretions conveyed to the lymphatics. To soften and wash out is the object of nature.

The lymphatics begin the work of washing out by starting action of the excretories and furnishes the water to soften, which is injected into the bowels from the mouth to the extremities by a system of salivation.

Tumefy, Tumefaction

Webster's definition of tumefaction is to swell by any fluids or solids being detained abnormally at any place in the body.

The location may be in, or on any part of the system.

No part is exempt; even the brain, heart, lungs, liver, stomach and bowels, bladder, kidneys, uterus, lymphatics, glands, nerves, veins, arteries, skin and all membranes are subject to swellings locally or generally, and with equal certainty they perish and shrink away. If either condition should exist death to the parts or all of the body will occur from want of nutrition.

Instance, in lung fever which begins when swelling is established in lymphatics of lungs, trachea, nostrils, throat and face.

At once you see the pressure on the nerve fibres compressed to such degree that they cannot operate excretories of lungs or any part of the pulmonary, system.

Veins, suspended by irritation of the nerves, arteries are excited to fever heat in action with increase of tumefaction.

A tumefying condition undoubtedly marks the beginning of all catarrhal diseases. Its ravages extend to the diseases of the fall and winter seasons.

They are so marked on examination that the most skeptical cannot dispute or doubt the truth of this position. In fact he is already committed to a belief that there is something in the fluids that he must purify by the chemical process of drugs.

How to Treat the Spinal Column

Now as we are dealing with the omnipresent nerve principle of animal life, I will tell you this one serious truth, and support it by the fact of observation.

To treat the spine, and thereby irritate the spinal cord oftener than once or twice a week will cause the vital assimilation to be perverted, and become the death-producing excretor, by producing the abortion of the living molecules of life, before fully matured, while in the cellular system, which lies immediately under the lymphatics.

Your patients will linger long from the change of the nutrient ducts to throw off their dead matter into the excretories, which death was caused by the undue, or too many treatments of the spinal cord.

If you will allow yourself to think for a moment, or think at all of the spinal cord being irritated, and what effect it will have on the uterus you will realize that I have told you a truth, and produced an array of facts to stand by that truth.

Many of your patients are well 6 months before they are discharged.

They are kept on hands because they are weak, and they are weak, because you keep them so from irritating the spinal cord.

Throw off your goggles and receive the rays of the sunlight which forever stand in the bosom of reason." - Dr Andrew Taylor Still, DM, DO in "Philosophy of Osteopathy", 1899.

The Seeds of Destruction in the Human Body

"In the year 1874, I proclaimed that a disturbed artery marked the beginning to an hour and a minute when disease began to sow its seeds of destruction in the human body. That in no case could it be done without a broken or suspended current of arterial blood, which by nature was intended to supply and nourish all nerves, ligaments, muscles, skin, bones, and the artery itself.

He who wished to successfully solve the problem of disease or deformities of any kinds in all cases without exception would find one or more obstruction in some artery, or some of its branches.

At an early day this philosophy solved to me the problem of malignant growths and their removal by reproduction of the normal flow of the arterial fluids, which when done transfers the blood to the venous circulation for return and renewal after the process of renovation is completed by the lungs, excretories, and porous system.

Fevers, flux, headaches, heart and lung troubles, measles, mumps, and whooping-cough, and all diseases met and treated since that time, have proven to my mind that there is no exception to this law.

The rule of the artery must be absolute, universal, and unobstructed, or disease will be the result.

I proclaimed then and there, that all nerves depended wholly on the arterial system for their qualities, such as sensation, nutrition, and motion, even though by the law of reciprocity they furnished force, nutrition, and sensation to the artery itself, and further proclaimed that the brain of man was God's drug-store and had in it all liquids, drugs, lubricating oils, opiates, acids, and anti-acids, and every quality of drugs that the wisdom of God thought necessary for human happiness and health." - Dr Andrew Taylor Still, MD, DO in "Autobiography of Andrew Taylor Still", 1897.

The Concept of Drainages

Here one must state that: The Concept of Drainages is one that every Emunctologists must always have present.

When the activity from the nerve forces and the muscular plexus along any portion of the cerebrospinal system, from which organs or portions of the body receive their nerve impulse, are stimulated, this sets up a circulation that allows for refuse forces or drosses from the system to be carried out in a normal way and manner, this is drainage.

Not necessary that excesses only through the alimentary canal be increased in eliminations to make for proper drainages, but the muscular forces or tendons or bursae or the areas along the system where the nerve plexus produce the improper impulse need to be stimulated.

This is why; The activity through a Massage properly Osteopathically given sets up such drainages, better than the administering of those things that stimulate an already disturbed condition between the deep circulation and the superficial.

"**If we can come to the rescue, by producing better drainage through the veins and excretory channels, we prove our ability as surgeons by using Nature's knife in place of the surgical knife of steel.**

Growths in the abdomen, such as tumours, only form when some channel of drainage is shut off.

If we wish to stop or remove a growth of any organ in the abdomen, we must line up the body in good form for the appropriation of the arterial blood by the organ to which it was sent out by the heart; then fix all the vessels of drainage, turn the nerves loose, and the work will be done.

Too much use has been made of the knife, and too little trust placed in Nature.

It is equally important to have perfect drainage from the parts, for without it the good results cannot be expected to follow your efforts to relieve diseases above the neck.

This human head shows many effects, diseases, whose cause can be traced to lack of nourishing blood-supply, to poor drainage and exhausted fluids, which should be returned through the venous or thrown out through the excretory system.

You see where the trouble is, and by that knowledge know that you must assist the obstructed drainage to the normal. Then your labour is done; the arterial and venous energies will take care of the necessary drainage and repair.

The human body will sicken and die from imperfect drainage, just as certainly as the inhabitants of a great city would become extinct by collapse or any method that would block the sewerage main, the vena cava of a great city.

The more we know of perfect drainage of the human body, the more satisfactory will be results obtained by keeping up the natural drainage, which should be perfect at all times.

As we have referred to the heart and lungs and to the importance of keeping them free from all obstructions, that they may do their work to the degree required of them by Nature, we must also by our reason embrace the importance of keeping the brain free from impingement by any stagnation in the face or neck that would diminish freedom of action to and from the brain, the known local center of nerve-action.

Our success as Osteopaths in treating erysipelas depends altogether upon good nerve-action, blood-supply, and normal drainage.

We all know, if we have even a little knowledge of anatomy, that the coeliac axis branches out from the aorta just below the diaphragm, and supplies the pancreas, spleen, liver, and stomach. We know how the blood returns from each one of them, and also how the nerve-supply leaves the solar plexus to give blood-action to and from each organ of the abdomen.

Perfection in blood-flow, to and from all organs, must be perpetually normal or disease will show its work in lack of blood to supply the local or general nourishment to the organ that is diseased or starved for want of (clean and nutrient rich) blood.

If the arterial supply is good, **the venous and lymphatic systems must do the work of draining**, or we will have a large spleen or liver, a congested stomach or pancreas, all from the break in the blood, lymph, or nerve-chain of supply.

This law holds good in supplies, drainage, purity, and health of all organs of the system. The cause of uterine growths, and of diseases of the intestines, is absolute; Nature never changes.

To find the obstruction of the blood-and nerve-functioning is the object of the person who reasons and cures by Osteopathy.

You see that the supply and drainage of all the organs below the diaphragm is a complete system, which shows great and perfect wisdom in the plan and purpose for which it was formed and placed in position, to do the separate and combined work of the abdominal host.

When all do a perfect work, nothing but health can be shown as a result.

No disease can possibly come to any of these organs while supply and drainage are absolutely perfect.

If we wish to reduce the tumour, we must proceed to remove the obstructing causes, with the expectation of relieving and reducing the abnormal growths **through natural channels of drainage**.

I have reduced a number of tumours whose diameter was from 4 to 6 inches, without the use of the surgeon's knife.

I am satisfied that some tumours are not reducible, from the fact that they have passed the point of vital response before applying for a Osteopathic Treatment.

If so, we have no other question to ask. We know the cause and should well understand and relieve the sufferer by opening up drainage, forwarding the best of blood for the repair of damages done by stagnant impurities.

To illustrate this thought, we will begin the preparation of diseased blood by deranging the colon from the rectum through the descending, sigmoid, transverse, and ascending colon or the caecum, which contains the gate of exit through which the fluids must pass to keep the faecal matter in a soft, digestible, and movable condition.

We will bruise, poison, ligate, kink, or twist the colon from the caecum to the descending curve on the left side.

If we stop the blood, we have stagnation, congestion, fermentation, death of fluids, and poisonous blood to be absorbed by the lymphatics and other members of the secretory family, and to be conveyed to the liver through the venous system.

This diseased blood becomes the nourishment for the liver, which is expected to be healthy and act as a purifying laboratory, preparing substances through purification for blood - the blood of life, and not the blood of death, with poisonous impurities.

If we can come to the rescue by producing better drainage through the veins and excretory channels, we prove our ability as surgeons by using Nature's knife in place of the surgical knife of steel.

Growths in the abdomen, such as tumours, only form when some channel of

drainage is shut off. If we wish to stop or remove a growth of any organ in the abdomen, we must line up the body in good form for the appropriation of the arterial blood by the organ to which it was sent out by the heart; then fix all the vessels of drainage, turn the nerves loose, and the work will be done.

Too much use has been made of the knife, and too little trust placed in Nature.

Much good health depends upon its good work, and much bad health and disturbance can reasonably be expected to follow imperfect Supply by arterial action or imperfect drainage through the venous and lymphatic vessels." - Dr Andrew Taylor Still, MD, DO, in "The Philosophy and Mechanical Principles of Osteopathy", 1902.

> *"If you would allow yourself to reason at all, you must know that sensation must be normal and always on guard to give notice by local or general misery, of unnatural accumulation of the circulating fluids. Each set of nerves must be free to act and do their part. Your duty as a master mechanic is to know that the engine is kept in so perfect a condition that there will be no functional disturbance to any nerve, vein, or artery that supplies and governs the skin, the fascia, the muscle, the blood or any fluid that should freely circulate to sustain life and renovate the system from deposits that would cause what we call disease." - Dr Andrew Taylor Still, MD, DO in "Philosophy of Osteopathy", 1899.*

Perfect Drainage

"At this point it will be proper to suppose a case by way of illustration.

Suppose by some accident the bones of the neck should be thrown at variance from the normal to a bend or twist.

We may then expect inharmony in the circulation of the blood to the head and face with all the organs and glands above the neck.

We will find imperfect supply of blood and other fluids to the head.

We may expect swelling of head and face with local or general misery.

Thus you have a cause for headache, dizziness, blindness, enlarged tonsils, sore tongue, loss of sight, hearing, memory, and on through the list of head diseases, all because of perverted circulation of the fluids of the brain proper of any local division.

It is important to have perfect drainage, for without it, the good results from a treatment cannot be expected to follow your efforts to relieve diseases above the neck.

What Treating Means

"Here I want to emphasize that the word treat has but one meaning, that is to know you are right, and do your work accordingly. I will only hint, and would feel embarrassed to go any farther than to hint to you, the importance of an undisturbed condition of the 5 known kinds of nerves, namely: sensation, motion, nutrition, voluntary and involuntary, all of which you must labour to keep in perpetual harmony while treating any disease of the head, neck, chest, abdomen, pelvis, spine and limbs. If you would allow yourself to reason at all, you must know that sensation must be normal and always on guard to give notice by local or general misery, of unnatural accumulation of the circulating fluids.

Each set of nerves must be free to act and do their part.

Your duty as a master mechanic is to know that the engine kept is in so perfect a condition that there will be no functional disturbance to any nerve, vein, or artery that supplies and governs the skin, the fascia, the muscle, the blood or any fluid that should freely circulate to sustain life and renovate the system from deposits that would cause what we call disease." - Dr. Andrew Taylor Still, MD, DO in "Philosophy of Osteopathy".

Concerning the Liver

*"Now a few hasty questions in reference to the liver. When the nerve and blood supply to this important organ are good, is that all that is necessary for it to do good work? You say "**yes, give me nerve force, blood supply, drainage, and plenty of nourishing diet, and I will guarantee the results to be good and satisfactory**." - Dr Andrew Taylor Still, MD, DO in "Osteopathy Research and Practice", 1910.*

Retroflexion

Bending backward of an organ, especially of the body of the uterus, upon itself

"Retroflexion produces pelvic distress, dysmenorrhoea, menorrhagia, uterine haemorrhage, leucorrhoea, abortion, sterility, ball-valve obstruction of rectum, ribbon-like stools, pain in defecation, accumulation of faeces, permanent distention of the canal, loss of peristaltic power, intestinal paralysis, retrograde obstruction, and disturbance of the whole digestive functions, flatulence, copraemia, fermentation, pyrosis, nausea and various phenomena, disorder of liver, imperfect nutrition, disordered secretions, hysteria in all its manifold eccentricities, sciatica, lumbago, tic doloureux, rheumatism, headache, vertigo, syncope, emotional, moral, and intellectual disturbance, pain in the spine, etc." - Dr Robert Barnes, MD in "A Clinical History of the Medical and Surgical Diseases of Women", 1873.

Retroflexion is an important condition, which brings to mind the importance of each anatomical structure of the body to be in its correct place.

Osteopathic Manipulation along with Chiropractic Adjustments are the ideal methods to bring relieve from structural misalignments to any part of the anatomical body.

Being either an organ, a bone, or a muscle out of its place by accident or injury, if any of these are creating a suppression, or an impediment to the either the circulation of the Blood and Lymph of to the nerve system, then these anatomical misalignments must be corrected, depending on their nature either by Osteopathic Manipulation or Chiropractic Adjustment.

Osteopathic Treatment

"Dr. Carl P. McConnell gave the result of his 6 years experimental labours in the A.T. Still Research Institute at Chicago, holding that some of man's bodily ailments, are due to spinal lesions.

It was the aim of Dr. McConnell and his assistants to cause all sorts of diseases on healthy dogs, and then to examine the nerves running from the spine to the part affected, as well as the blood vessels an tissues.

Dr McConnell explained in the beginning that the backbone is affected sometimes by a cold, by a fall, or by a slight jostle any of which may be forgotten by the patient.

He told how he had given one dog the goitre by kinking the neck bones. A few days afterwards there appeared a swelling in the dog neck, and then the dog was killed and the neck examined, whereupon It was found that the goitre had been caused by a lesion Interfering with the nerves running to the affected part.

Dr. McConnell's assistants explained that osteopaths, hold that the germs do not cause trouble until the part breaks down through lack of nutrition, due to nerve stoppage, and this nerve interference is due to the backbone ills.

Dr. McConnell showed on slides speciments taken from a dog thus infected with Bright's disease.

A few days after the backbone had been affected, evidences of the disease were found.

The nerves from the affected section of the backbone had been more or less atrophied, small blood vessels had broken down, their corpuscles breaking through the walls, and the kidneys showed the effect of malnutrition, which had brought on the Bright's disease.

He showed slides relating to a case of indigestion similarly given to another dog. He told bow, in some cases, dogs and cats were affected with ordinary diseases in the same way, and then cured by osteopathic treatment.

Dr. McConnell cautioned his hearers against over treatment.

Not infrequently the cure needed time after it had been arranged for by treating

the spine. While the nerves and weakened parts were using up time in getting strong again after sufficient treatment had been given, the practitioners and their patients should be patient under the continuance of some of the symptoms, which would eventually disappear." - in "The New York Times", 27 March 1910.

The General Osteopathic Treatment

"The Osteopathic Treatment is not stereotyped, but flexible; capable of infinite modification to meet the varied therapeutic indications that present themselves in disease.

Much that can be said in a general way concerning the employment of manipulative therapy may, in a particular condition, be inapplicable.

What is commonly referred to as "the general osteopathic treatment", may involve quite different technique in the hands of different practitioners, and in its application in diverse conditions. Certain highly specialized manipulations have been evolved for particular purposes and have their special indications.

Yet, regardless of technique or disease, certain fundamental principles underlie manipulative therapy, which should be directed toward the accomplishment of three definite objectives.

These are:

1. The specific correction of bony lesions,
2. The normalization of soft tissues,
3. The putting of affected articulations through their complete ranges of motion.

The order in which these things should be undertaken is, perhaps, immaterial and unimportant, since different and equally successful physicians advise opposite routines.

It seems logical, however, to assume that the actual articular immobilization can be more easily overcome, and that it will not tend to recur so promptly, if contracted muscles and edematous tissues are first relaxed and normalized.

Certainly complete articular motion cannot precede specific lesion adjustment.

If a patient be examined and his lesions located and a treatment that includes only soft tissue relaxation be given, it will be found upon re-examination that some, and often many, of the lesions have disappeared.

These and other considerations lend weight to the opinion that the best results are secured with the minimum of exertion on the part of both physician and patient when soft tissue work precedes specific lesion correction, and the establishment of complete articular motion comes last." - Dr Yale Castlio, DO in "The Principles of Osteopathy", 1930.

Observations on Common Clinical Conditions

The following conditions have their origin in the grater part from Organic Inflammation, and in the lesser part from a Functional Inflammation.

1. Slipped Disc, (inflammation of the sciatic is normally manifested in combination with)
2. Herniated Disc, (inflammation of the sciatic is normally manifested in combination with)
3. Bunion

Therefore, this conditions and their treatment, by the Emunctologist consists in Hydropathic Treatments (first and foremost), Healthy Diet (essential), Osteopathic Manipulation (always useful) and Chiropractic Adjustments (always of benefit).

A Final note on the Variations of Manipulations

Osteopathy is a wide field, and there can be as many manipulation ways and methods as there are individuals, thus if a functional conditions is not resolved by an osteopath within a maximum of 19 Osteopathic sessions (only few cases would need such amount of Osteopathic Treatments, but never the less they do exist, just be mindful of this), then either the right manipulation is not being carried out, or the therapeutics needed to resolve the conditions is lacking. If the case is indeed called to be treated by Osteopathic Manipulation then would be advisable to have more than one Osteopath looking at the body from a different perspective and angle.

Chapter 32

The Role of Chiropractic in Emunctology

Chiropractic Manipulation has several roles in Emunctology among them is that it Promotes a Healthy Lymphatic System.

Chiropractic Treatment is Adjustment

"It is sickening to read of bacteriological experiments.

Excretory and secretary fluids are taken from live and dead animals; poisonous drugs, decayed tissues, purifying and fermenting mixtures are stirred up with the most dangerous animal poisons known.

These are examined with the hope that they may learn the cause of disease.

These microbe hunters are at the wrong end of the string.

Chiropractors are looking for causes.

Bacteriologists are examining effects.

In indigestion, tissues are depleted from lack of nutrition, muscular walls are paralyzed, not allowing peristaltic movement caused by impingement of those nerves as they emanate through intervertebral foramina on their way to the stomach.

A Chiropractor adjusts the subluxation and immediately reparatory impulses are at work rebuilding.

Previous to adjustment the reparatory process was endeavouring to right matters, but impingement of those nerves acted as a check.

Adjustment released pressures and restored normal functions.

Innate develops during our lifetime just so much as the voluntary nervous system places us in contact where she voluntarily senses the pleasures of that with which she sees or feels, etc.

When we see, hear, smell, or fell, it is functionated through two minds.

Both sensory (the Educated and Innate) are sensing the same thing at the same time. If pleasant, Innate relaxes, becomes receptive; if injurious, she rebels and forces it out. This acting depends some upon how our parents developed their Innate voluntarily, and how we are developing our Innates now will be noticeable in our children.

This Innate sensory and motor nervous system never sleeps, will sense danger when our Educated system is asleep, and act upon it, thus showing, not reflex action, but Intelligence, deep thought, upon the part of a superior control.

You are now beginning to see the difference between two minds and their

expressions through two independent nervous systems.

They are distinctly separated in functions, action, depth of observation and thinking powers.

Each mind has a memory.

You can voluntarily remember that which happened yesterday or many years ago. The hypnotist puts to sleep the Educated nervous system and through involuntary sensory calls certain things to be brought forth, thus drawing from Innate's memory what long ago was forgotten by the Educated.

The involuntary motor responds to the sensory commands received.

Educated and Innate nerves do not, nor can they, communicate within the cranium. They have a constant communication through peripheral endings of both sets.

Sensory or motor, for either set intercommunicating that which is pleasant and worthy to take up, or acting upon that which is detrimental and should be forced outward, both working in perfect harmony (not "sympathy") unless, as occasion happens, our Educated thinks itself capable of dictating to Innate what and how they ought to do.

As a protective measure against the spinal subluxations, Innate, in building and developing the child, prenatally and postnatally, does not allow all functional nerves going to a given point to emit through the same foramen; thus, sensory of one and motor of the other exist above a certain vertebra and vice versa; then an existing subluxation would only make abnormal the functions of nerves emanating through that foramen.

The depth of thought or ability of the Voluntary or Educated mind is significant compared to the continued added knowledge of each life to the Innate; therefore, she knows and is more capable of running this body, through nerves and their functions.

This combined knowledge of many generations senses, through Innate sensory nerve fibrils, a poison more quickly and better than the

Educated sensory fibrils and will act upon it long before our voluntary sensory nerves are aware that that which was given voluntarily, to the body, was a damage.

We frequently take poisons into the stomach in the form of solids or liquids, into the lungs as gases, or have injected vaccine poison, which Innate immediately senses is damaging. This effects involuntary sensory abnormally, impressing itself as such upon Innate.

This involuntary sensory nerve bundle within the cranium has its corresponding motor area; the latter tract now receives abnormal sensations, making adaptation accordingly.

This motor area controls motion produced by contraction of muscles; hence, we have an abnormal or excessive contraction along the path of these nerves to which this bundle goes.

This is the chill or invasion period, which is the rigour of involuntary muscles in their endeavours to throw off poisons, always preceding all fevers.

The greater the poisoning, in strength of quantity, the greater the chill and

chronic results that follow.

Pressure upon nerves exists only as they emerge between hard substances, the excessive contraction of muscles around intervertebral or spinal foramina produces the occlusion; pressure is the result.

This is the second or period of fever, continuing until earthy matter is burned out of the bones, after which the recuperative, desquamation, eburnating, or third period follows.

Poison inhaled will produce fevers located in the chest, as pleurisy, lung fever, etc., the reason being that sensory and its corresponding motor make a complete circuit by way of the brain, returning to the same tissue.

This intelligently explains the how and why some fevers are contagious and run in epidemics.

They are contagious so far as foreign substance produces a specific cause in the body which manifests fever effects. (see: "Cycles", The Science of chiropractic, Vol. 5, 1920)

The degree or progress of any disease depends entirely upon how great the pressure.

It is an established mechanical principle that light pressure stimulates; a heavy one paralyses.

In all diseases we have 2 divisions:

1. Too much, or
2. Not enough activity of one or more functions

Of the kidneys, we have Bright's disease or diabetes; in the bowels, constipation or diarrhoea. We have explained how poisons can produce disease.

Let us briefly study the opposite in understanding how massage, baths, magnetic treatment, etc., do in many instances relieve diseases without giving Chiropractic adjustments.

Poisons produce rebellious actions, excessive contractions. These follow the introduction of irritable substances. That which is soothing, quieting, lulling or relieving produces a relaxed condition of voluntary and involuntary muscular systems, putting the body in a complete receptive condition.

The slightest movements made when completely relaxed often produce accidental adjustments, thus restoring functions as easily as if done by a scientific adjustor. This can happen only in those cases where the vertebrae are not misshapen by arthritis.

It is well known to Chiropractors that when patients are relaxed an adjustment can be given much easier than when braced.

Innate has sensory and motor nerves in all parts of the body.

Educated intelligence has nerves of each only in those parts that come in contact with the external, as head, the senses, extremities, anus, lungs, but none of the internal, digestive, assimilative, calorific, secretary, excretory, lymphatic or circulatory systems.

Every fibril has its functions to perform; there is no anastomosing as in the circulation of the blood.

A ganglion is a tying place for fibres as they separate from the cable coming from the brain, where they originate.

There is no act performed in the body, but what is tinder the direct control of a voluntary brain system." - Dr B. J. Palmer, DC, in "The Science of Chiropractic, Its Principles and Philosophies", 1920.

Posture in the Prevention of Disease

"Dr. Philip H. Kreuscher, MD in a radio broadcast from the Clinical Congress of the American College of Surgeons, during their meeting in New York, October 12 to 16, tritely stated:

> ***"By all manner of reasoning, good posture predisposes to good health, while bad posture will surely bring about ill health."***

Proper posture, both sitting or standing, then may be fitly termed a form of preventive medicine, a gospel which should be preached and practised everywhere." - in "International Journal of Medicine and Surgery", December 1931.

Thus it is important to note that, these 3 ailments, are those that are most common in the causation of disease.

1. Subluxations along the spine (Cerebrospinal Nerve System)
2. Glandular In-Coordination
3. Toxaemia

Chapter 33

Inflammation & Infection

*"**Inflammation, is a struggle for life, and not a destructive process; it is essentially a vital phenomenon eminently reactionary against a morbid agent.** The first step in this process, is leukocytosis, or the exaggerated production of white corpuscles in the blood; and the second is the absorption and destruction of microorganisms by these leukocytes, showing the defensive action of the latter; this is called "phagocytosis." - Dr. M. Germain, MD in "Bulletin de l'Academie de Medecine", 10 May 1892.*

Mortification of the Cellular Tissue from Inflammation

"The cellular tissue is not only more frequently the seat of mortification, but is also more extensively and more rapidly destroyed by it, than any other tissue of the body.

Mortification of Muscular Tissue

Inflammation of muscular tissue seldom terminates in mortification, unless produced by an in jury which affects at the same time other neighbouring tissues.

Gangrene and sphacelus (necrotic tissue) of the muscular tissue of the organs of deglutition (swallowing) and digestion, and perhaps of the heart, sometimes accompanies similar states, or severe inflammation of the other tissues with which it is in contact, but particularly of the cellular tissue.

The loss of substance, thus occasioned, of the muscular tissue in a hollow organ such as intestine, becomes afterwards a serious, and, perhaps, irremediable evil; for muscular tissue not being reproduced, a cicatrix, equal in extent to the loss of substance sustained, is formed, which, possessing a contractile property, gradually diminishes in bulk, and ultimately constricts, even to complete obliteration, the cavity of the tube in which it exists.

Such instances are not rare in the small intestines after fever, and the writer possesses a delineation of a case in which there were 3 strictures of the small intestine, through which only a small probe or writing-quill could be passed.

We have not seen a case of gangrene of the heart, unless some forms of softening, to which this organ is liable, are to be regarded as of this nature.

Gangrene and sphacelus of arterial and venous tissues may be noticed here, from the functional connection which exists between them and the heart.

They are observed more frequently in the latter than in the former tissue, but do not occur in either until after the cellular sheath of the vessels has been destroyed.

When gangrene or sphacelus of the spleen is observed, it is found to follow external injury, followed by peritonitis, or, as it is believed by some, a morbid state of the blood, with which it is in general greatly distended, as in severe cases of some intermittent and remittent fevers of marshy countries.

The appearances, however, which this organ presents in these fevers is, perhaps, in a great measure owing to putrefaction." - Dr John Forbes, MD, FRS, Physician to the Queen Household, in "The Cyclopaedia of Practical Medicine", 1845.

Cellular Levels of Organization

1. Cells: Cells are the basic functional units of animal life.

2. Tissues: When specialized cells group together, they form tissues.

The entire animal body is made up of only four basic tissues: epithelial tissue, connective tissue, muscle tissue, and nervous tissue.

a. Epithelial tissue is composed entirely of cells, and its main jobs are to cover body surfaces, secrete materials, and absorb materials.

b. Connective tissue holds the body together.

c. Muscle tissue moves the body inside and out.

d. Nervous tissue transmits information around the body and controls body functions.

3. Organs: The next level up from tissues is organs. Organs are made up of groups of tissues that work together for common purposes.

4. Systems: Systems are the most complex level of body organization. Systems are groups of organs that are involved in a common set of activities.

Inflammation

Inflammation always precedes pain. First there must be inflammation always, before pain, or disease occurs, and all inflammation is caused by Functional or Organic Factors.

The Origin of Inflammation Is Either:

1. Functional in Origin: Inflammation from injury, or;

2. Organic in Origin: Inflammation from Metabolism, Malnutrition, or contact with external Chemical Contaminants absorbed by the body though either breathing (lungs) or skin.

Inflammation Evils due to Toxaemia

"**There can be no doubt that the most serious results of over-eating are brought about by blood-poisoning "toxaemia."**

The extra catabolism which over-eating induces leads to an excess of poisonous waste-products, and it is probable, that many of these are more toxic than are those which are formed when the food is kept within normal limits.

Over-eating further tends to cause toxaemia by setting up indigestion.

There is no sharp dividing line between normal digestion and indigestion, as with all other functions there are innumerable grades of efficiency, and it goes without saying that digestion is more likely to reach a high grade of efficiency when a mere sufficiency of food is taken than when the quantity is excessive.

Now the more efficient the powers of digestion the fewer are the poisons produced in the alimentary tract and the less their absorption into the blood.

It is, therefore, manifest, that if we desire to keep down the toxicity of the blood we should zealously guard against excesses in eating.

The toxaemia of over-eating induces a multitude of evils, the chief of which we now proceed to consider.

Toxins Cause of Inflammation

If not the sole, certainly by far the most potent, cause of Inflammation is Chemical Irritation. It is difficult to point to a single instance of inflammation in which this factor can be eliminated from causation.

We know that the most violent mechanical injury, such as the cut of the surgeon's knife, does not cause it in the absence of pathogenic micro-organisms, and, further, that the inflammation due to micro-organisms is wrought by the toxins which these emit.

Most cases of inflammation are due to toxins thus arising. In other cases the toxins causing inflammation are furnished by tissue metabolism, or they may be introduced as such into the body, as in the case of corrosive, alcoholic, and arsenical poisoning.

Gastritis and enteritis may be placed first among the many toxic inflammations due to over-eating.

Over-eating by disturbing digestion leads to an undue formation of toxins, which by their direct action set up inflammation in the lining membrane of the Alimentary Tract.

A familiar instance of inflammation, thus induced is the condition known as consumption of the bowels met with among children. It is essentially a toxic

enteritis, and, though it results from errors in the quality rather than in the quantity of food I mention it here as it admirably illustrates some of the worst toxic evils resulting from dietetic errors.

We are all familiar with these cases; the abdomen is large and flatulent and the motions are slimy, malodorous, and, it may be, bloody.

Examine a child who has been suffering for some time in this way and we shall soon satisfy ourselves that his general condition is as much due to toxaemia as to starvation; sufficient food may be absorbed, but nutrition is perverted by the action of irritant poisons.

The child is ill-grown and anaemic; the skin is thin, the eyelashes are long and silky, and the complexion is often wondrously like that observed in empyaema (pockets of pus that have collected inside a body cavity), in which disease there can be no doubt about its being due to toxaemia, disappearing as it does as if by magic upon evacuation of the pus.

The result in the main of defective feeding leading to toxaemia.

If we give a child plenty of sunlight and fresh air, which tend to keep the body generally and the digestive organs in particular, in a healthy state, and feed it on a diet which is correct as to quality but insufficient in quantity, we shall tend to get starvation, pure and simple, without toxaemia, but the condition in this case is very different from that with which we are so familiar as occurring in consequence of a dietary which induces a high degree of toxaemia.

I have referred to these cases of enteritis because they show how grave and extensive are the evils which may result from toxaemia induced by dietetic errors.

Toxaemia Caused by Gluttony

This may set up inflammation in any part of the body, either directly, or indirectly by lowering the resistance of the tissues to bacterial invasion.

In gouty bronchitis, or the bronchitis of children suffering from consumption of the bowels, the toxic action is direct.

As an instance of indirect action tuberculous inflammation may be cited.

We have seen that the scrofulous (tuberculosis of the lymph nodes) diathesis may result from alimentary toxaemia which causes a diminished resistance on the part of the tissues to the attack of the tubercle bacillus.

A more striking instance of the indirect action of such toxis in promoting inflammation is shown by its effect on suppuration, now known to be due to the action of specific (pyogenic) cocci.

One of the first things to be done in all cases of actual or threatening suppuration—e.g., mammary abscess or stye in the eye, is to administer a purge; and, indeed, it may be said that in all inflammations one of our chief aims should be to diminish gastric and intestinal toxis.

Toxaemic inflammations are, of course, most frequent where the toxins are most abundant and, as we should expect, the poisons are most abundantly met with in the organs of elimination, whither they speed in their effort to escape

from the body.

This they do by all the surfaces communicating with the exterior.

We are too much in the habit of thinking of the poisons as being eliminated almost exclusively by the skin and kidneys, but the fact is they get out wherever they can: by the skin, the kidneys and the mucous liming of the alimentary, respiratory, and genito-urinary tracts.

We know that drugs may be eliminated from all these regions and the same is true of the toxins of disease.

We are all familiar with laryngitis, bronchitis, nephritis, cystitis, urethritis, gastritis, and dermatitis, of gouty origin, and we recognise that they are produced by the poisons of gout, but do we sufficiently realise that there are multitudinous other poisons capable of exciting similar inflammations.

Here I may refer to the fact that when once inflammation has been excited by toxins it tends to persist apparently after the toxins have been eliminated, the inflamed areas thenceforth appearing to possess a peculiar attraction for the toxins.

How otherwise are we to explain such a case as the following:

A man who for years had suffered on and off from arthritic gout suddenly developed bronchitis; thereafter his arthritis disappeared once for all, while the bronchitis continued on and off till his death.

The presumption is that the gouty poisons set up bronchitis and that the inflamed bronchial surface thence forth attracted the poisons which found a ready exit in the abundant bronchial secretion, thus relieving the arthritic phenomena.

Cardio-Vascular Disturbances

The toxaemia of over-eating may produce functional disturbances in the heart and arteries, such as palpitation and vasomotor irregularities, but the chief way in which it affects the cardio vascular system is by increasing peripheral resistance.

This it does by constricting the systemic arterioles, apparently with the object of increasing the urinary flow so as to relieve the toxaemia, the intra-renal arterioles remaining in all probability dilated.

As a result the pressure rises in the systemic arterioles, the whole systemic arterial tree, together with the left side of the heart, being subjected to increased strain which eventuates in thickening and degeneration of both.

Thus it comes about that the cardio vascular system wears out sooner in the gourmand than in the spare feeder.

Many are the dangers which beset the path of the habitual gourmand, but perhaps the greatest are those pertaining to the cardio-vascular system: he often dies from a prematurely worn-out heart or from the rupture of a Miliary Aneurysm (An aneurysm that is tiny like a millet seed, Miliary Aneurysms tend to affect minute arteries in the brain and, in the eye, in the retina).

Degenerations

The toxaemia of over-eating may lead to degeneration in connexion with the inflammations and cardio-vascular changes just considered.

It may also induce degenerations apart from these; the constant soakage of the tissues with toxins injures the delicate protoplasm, which thus tends to degenerate prematurely, its place being taken by fibrous tissue.

Thus over-eating materially hastens that fibroid encroachment which is a natural senile change.

The liver and the kidneys are especially apt to suffer; chronic over-eating causes chronic engorgement of the former organ and imposes upon it an amount of work far in excess of its powers; it also increases the work of the kidneys and exposes them to constant irritation by the toxins which are perpetually passing out through them.

Gout

Over-eating is one of the chief causes of gout which is essentially a toxaemia.

This disease originates in the digestive viscera, it is certain that errors of diet play an important part in its causation.

These errors do not merely pertain to kind, but to quantity.

We are too much in the habit of simply telling our patients to avoid this and that without insisting upon the importance of keeping the total quantity of food within proper limits.

Nervous Disorders

The toxaemia of over-eating may set up a variety of Nervous Disturbances, such as:

Headache, Giddiness, Tinnitus, Irritability, Depression, Drowsiness, Lassitude, Numbness, Flushings, Pains about the body, Weakness, or even Partial Paralysis of Muscles; while Neuroses of all kinds: Epilepsy, Angina Pectoris, Asthma, &c., tend to be aggravated by it." - Dr. Harry Campbell, MD, in "Observations on Diet", Lancet, 24 & 31 May 1902.

The Leucocytosis of Disease

"So many diseases are associated with a more or less marked leucocytosis that it is only necessary to enumerate some of the more striking instances and more useful to remember the exceptions or more particularly the cases in which a diminution (hypo-leucocytosis) occurs.

Practically all inflammations, particularly of serous membrane, and any suppurative process attended by toxaemia would ordinarily produce leucocytosis, yet we may have these, lacking such a phenomena because:

1. The inflammation or toxaemia may be too slight to excite a reactive change.
2. Because the toxin over whelms the organism, thus preventing leucocytic reaction.
3. Because the organism is primarily too feeble to respond.

In illustration one may cite lobar pneumonia as representing a disease in which leucocytosis is ordinarily marked, and typhoid fever in which a leukopaenia is ordinarily found.

These diseases stand at opposite poles, the one being sthenic and the other asthenic, the one of brief duration, the other prolonged and tedious, the one showing early and profound toxaemia, the other allowing its victim to escape by resolution before the system is overwhelmed by toxins.

Acute appendicitis offers another illustration.

In this disease one may have an inflammation and toxaemia so slight as to produce no leucocytosis, and overwhelming toxaemia with the same result, or, as is the rule, a well defined leucocytic reaction representing good vitality opposed to sharp infection.

It is useless to attempt to name or even tabulate the conditions giving rise to leucocytosis.

In abscess it is practically constant, but in malignant disease a high count may be found only in rapidly growing tumours of the kidney, lungs or liver, and in the author's experience especially in metastatic hepatic invasion from gastric carcinoma.

In ptomaine poisoning, uramia, cholamia, and gas poisoning the leucocytosis may be marked. So also in cases of acute delirium, convulsions, after surgical operations or indeed after general anasthesia.

Morbid Anatomy

That of an Acute Infection with Profound Toxaemia. The lymph vessels are chiefly affected, the glands being enlarged, edematous and hemorrhagic, or showing suppuration and external ulceration.

The bacilli are generally distributed, the kidneys and spleen are hyperaemic and the lungs may show pneumonia and infarction.

Primary and secondary carbuncles, ecchymoses and dermatitis may be present and the viscera generally show fatty and parenchymatous degeneration with marked hyperaemia." - Dr Charles Greene, MD in "Medical Diagnosis; a Manual for Students and Practitioners", 1907.

The Colon as a Focus of Infection

"The conception of systemic or general disease arising from some localized focus of infection has been held for many years.

This is especially true of lymphadenitis and lymphangitis of bacterial origin arising from infection in the extremities, or acute abscesses about teeth or tonsils.

Payton and Paine, in 1900, and Sir James Brattie in 1904, showed the relationship between infected tonsils and Rheumatism.

E. L. Opie in 1901, pointed the relationship of acute haemorrhagic pancreatitis and distant foci of infection.

Rosenow, in 1902, showed the definite relationship between focal infection and such a widely divergent group of diseases as: Endocarditis, Acute Rheumatic Fever, Appendicitis, Erythema Nodosum, Ulcers of the stomach and duodenum, and certain cases of Herpes Zoster.

The literature is full of articles upon this subject." - Dr Elliott M. Hendricks, MD in "Southern Medical Journal", June 1941.

Anatomy and Physiology of the Distribution Route of Toxins and Normal Products of Metabolism

"Very early in my observation and study of the colon and the treatment of its pathologic conditions, I had occasion to notice the rapidity with which substances deposited in the caecum were absorbed into the general circulation and conveyed to remote portions of the body.

The object of caecal therapy by such applications we bring about an alteration in intestinal chemistry, restoring proper balance throughout the gut, for intestinal disturbance or disease depends upon chemical imbalance, and this, in its turn, is the result of interference with elimination, in most instances dependent upon some putrefactive process at work within the canal.

Even in scientific writing there is too much reference to "ptomaines" - even to "ptomaine poisoning", most evidently a pathological expression. Intestinal ptomaines can be more accurately designated has "phenol-ring poisonings", arising from the action of bacteria upon protein material.

Interference with elimination is likely to be traceable to an area of the intestinal lumen, where the normal cell-structure has been destroyed, and the wall is covered by exudate, consisting of fibrin with a few blood-cells enmeshed in it, clinging to the denuded mucous membrane.

From such a so-called "fibrin splint" pure cultures of both streptococcus, and staphylococcus can often be isolated, when specimens secured by colonic irrigation have been cultivated.

The presence of such a bacterial exudate is proof positive that putrefaction is going on within the gut. And the cause,of such a condition can be traced to the circulation of a phenol-ring poison — the "ptomaine" of common parlance.

Combination of this toxin, with a hydrogen sulphide NH radical changes its characteristics to such an extent that it becomes capable of absorption and conveyance to the liver by the portal circulation.

Here, under normal conditions, it becomes transformed into sulphate or sulphite, and in this form can be excreted by the kidney with no deleterious effects.

In the putrefactive intestine we have, therefore, a chemical cycle, for the putrefaction is due to the presence of a hydroxyl derivative of some carbocyclic compound, in which the hydroxyl is united directly to a ring carbon atom, producing the phenol-ring poisoning.

Now if this poison reaches the liver, in such large amounts that the gland can I no longer cope with them, the harmful substances will be returned unconverted into the circulation.

So-called "bilious attacks" have their origin in this unloading into the circulation of un-excreted phenol-ring products.

Nearly all subjects of intestinal putrefaction will give a history of such attacks, and often "of bilious headaches" earlier in life.

In older subjects we do not see this process in its active form so frequently, because – as it is well known – the human body has infinity powers of adaptation, and after these toxins have circulated freely for a considerable length of time, there will be a considerable degree of tolerance established, and the symptoms formerly induced will subside or vanish completely.

But though these active manifestations may be no longer prominent, the effects of such retention of ptomaines will be indicated in various ways.

At times only a single nerve ganglion will be affected, as by the production of facial neuralgia.

Toxic irritation of the splanchic area will result in lowering of the blood-pressure.

Still again, the direct effect may be upon the internal secretory glands - it is well, known that irritation of the adrenals may precede chronic toxaemia - and the visible symptoms will be only those referable to endocrine imbalance, such as:

1. High Blood-pressure
2. Obesity
3. Psychic Disturbances

Reasoning from this cycle of deleterious influences upon circulation and systemic mechanics, it was logical to base a system of therapy upon a similar distribution throughout the body.

If the intestinal tract could be cleared of the unwanted products of bacteriologic action, good drainage established to keep the vicious cycle of phenol-ring poisoning from repeating itself indefinitely. Good results would inevitably follow.

Clinically this reasoning was completely justified, and the practical application of the therapy over a long period has but served confirm and extend its usefulness .

The extraordinary work of L. R. Braithwaite, offers an anatomy and physiologic explanation of the rapidity with which distribution takes place, the mapped out route by which toxins, and normal products of metabolism travel to their appointed destinations.

During some unusual and perplexing cases abdominal section, this investigator was led to believe, that the previously accepted dictum, namely, that lymph never circulates from the ileoceacal angle to either the stomach or duodenum, must occasionally be subject to variation, or at least a certain extent of modification.

Desiring to find out whether aberrant paths of lymph-conveyance sometimes existed and, likewise, what effect disease of the lymph glands or vessels would have on the lymph flow, he instituted a series of experiments upon cats, and was able, later, to verify and extend his findings in man subjects.

During abdominal section, he succeeded in injecting a 1-60 indigo-carmine solution in distilled water into the appendix, and successfully observed the progress of the dye through the lymphatic channels.

The first observations confirmed those previously made by Jamison and Dobson; no communication was found with the lymphatics of the pelvis, but a few vessels passing into the retroperitoneal space of the right iliac fossa were observed to have taken up the dye.

Braithwaite found, however, that dye injected into the appendix would travel inward to the small intestine, and - at a higher level - outward to the ascending colon, which he regarded as an aberrant retrograde flow.

In a few of the experiments, the injection made into the appendix, passing through gland after gland in the ileocecal chain, reached and filled the group of glands surrounding the trunk of the superior mesenteric artery, never travelling further than this, however.

In the course of the work it was noted that in order to be sure of colouring this superior mesenteric artery group, the injection had to be made into one of the ileocecal glands.

None of the injections into the ileocecal chain ever had any effect upon the glands upon the greater curvature of the stomach near the pylorus, yet it had been previously demonstrated that connecting links in the lymphatic chain do in fact exist here.

The final conclusions reached from the work on both cats and humans were as follows:

1. Most of the lymph undoubtedly passes deeply to join the lumbar group; but in the living subject some is seen to pass upward, over the head of the pancreas to enter that group of glands, which frequently lies in a crescent, or in a series of small groups, along the inner border of the curled duodenum.

2. Some lymph undoubtedly passes through this group on to the duodenal wall itself and up to, and occasionally beyond, the pylorus. On two occasions the injection rose even higher, reaching the chain of glands along the common bile duct and even colouring the cystic gland.

Commenting on these results, Braithwaite applies them to possible disease of the duodenum and stomach. It may be taken for granted that the right iliac fossa is capable of producing either a toxin or an infective agent.

This may be the caecum, the appendix or the small intestine, but in his opinion, the appendix is the most likely to be culpable.

By travelling along the routes described in the preceding experiments, such deleterious material should pass along the lymphatic tracts until it reaches the duodenum. If there is never any aberrant or retrograde flow, it is clear that none of it can ever reach the duodenum.

Experiments with young postmortem material - mostly fetal or newborn subjects - indicate that the large groups of glands lying on or near the head of the pancreas, with the group on the superior mesenteric trunk, act normally as one big receiving station, with extensive backward and forward communications within the limits of the station;

> *"Something analogous to the circle of Willis at the base of the brain, allowing lymph, hindered in its flow in one direction, to pass in another."*

Making use of Braithwaite's own words:

> *"For some reason or other there comes pouring into the mesenteric group of glands a stream of infected lymph; the result is bound to be a lymphangitis and a lymphadenitis, spreading upward from node to node, with a gradually decreasing effect, as it nears the last line of gland sentinels before reaching the blood-stream; assuming the flow still goes on over a period of months or years. It is not too much to suggest that chronic obstructive lymphangitis or lymphadenitis develop, most markedly near the origin of the infection, but gradually involving the whole lymph-shed. The result of this change would be obstruction in the path of the normal flow. Now, the infected lymph, failing to make its usual exit, seeks new avenues of escape in all directions, misses whole groups of glands which, under ordinary conditions would check and filter it; and ebbs and flows to and fro until the glands around the superior mesenteric artery are reached and partly obstructed.*

Deprived of easy access through them to the lumbar glands, part of the lymph flows onward over the head of the pancreas and enters the glands on the concavity of the duodenum, and in process of time, bathes even the duodenal wall itself, finally escaping to the celiac glands by normal or possibly aberrant paths, and so reaches the receptaculum chyli." - in "The flow of lymph from the ileocæcal angle, and its possible bearing on the cause of duodenal and gastric ulcer", British Journal of Surgery, July, 1923.

The application of these observations to the normal distribution of bodily nourishment from the intestine to the different parts of the body, and also to the particular conditions set up by the exhibition of medication in the caecum is easy and logical.

If material deposited in the caecum either naturally or therapeutically is taken up by the lymphatics so that it rapidly finds its way once more to the upper part of the digestive tract, whence - in the case of food at least - it was originally derived, how often may this process be repeated?

If once, why not a dozen times. Nourishment might thus be carried to the stomach or oesophagus, pass through the digestive cycle until it came once more in contact with the lymphatic chains, and so continue, ad infinitum." - O. Boto Schellberg, RN in "The Rational of Cecal Medication", International Journal of Medicine and Surgery, February 1930.

Chapter 34

Pain

Types of Pain

1. Functional Pain

Produced by impact or damage to the skin, fascia (and all the tissues in between), which may affecting or causing damage to muscles and bones. The impact or damage causes inflammation, followed by the signals of pain, in this case, pain is felt immediately.

2. Organic Pain

Produced by inflammation in the internal organs, particularly those in the Abdominal Cavity. This pain may take days, weeks, months, and/or years to manifest. In the mean time inflammation (which will give rise to such pain) is occurring without pain being perceived.

An Example of Pain of Organic Origin:

> *"To the lay mind, carcinoma denotes pain. This may be true or not, depending on the location of the tumour and the structures involved. In malignancy of the gastrointestinal tract, pain is usually a late symptom except in many cases of carcinoma of the stomach, and almost always in epithelioma of the anus. Pain in the chest is a common complaint in advanced carcinoma of the esophagus. It is due more to the stasis of food and fluids above the constriction than to the tumour Proof of this is the marked relief following gastrostomy." - Dr Frank C. Yeomans, MD, in "Care of Advanced Carcinoma of the Gastro-Intestinal Tract", JAMA, 7 October 1933.*

All Pain Has Its Origin In Inflammation

Thus, we should know that the process of Pain starts with Inflammation.

And in some cases, may develop and progress to what is referred to as:

a) Disease in **Acute Manifestation**

Then if left untreated or unchecked, it may progress into;

b) Disease in **Chronic Manifestation**

The Progress of Pain

1. Inflammation
2. Pain
3. Acute Disease
4. Chronic Disease
5. Cellular Death: Cellular Dysfunction, Impaired Tissue Perfusion and Organ Deterioration
6. Organ Death, such as Cardiac Death, Brain Death, etc.

For pain to occur inflammation needs to be its precursor, there cannot be pain without inflammation happening first.

The cause of inflammation is the fons et origo of the physical manifestation of any condition or disease.

Please note that: Here we are referring to Physical Pain, not to emotional pain, and/or pain caused by the intentional or non intentional suppression, of normal organ activity. There is another chapter that deals with emotions and its effects on the body.

The Pain Sense

"Pain is a symptomatic sensory neurosis. The pain sense is to be distinguished from the tactile sense, the pressure sense, and the thermal sense.

It is, however, so closely associated with the last two that a considerable degree of pressure, unusual heat, or intense cold is accompanied by pain.

Pain is in the strictest sense a symptom.

Pain is a symptom of the most varied intensity, from a trifling discomfort to agony so extreme as to cause death. The pain sense is universally distributed throughout the body, the only structures in which it is wholly lacking being the hair and nails. Variations in the pain sense in different localities, probably clue to modifications in the sensory nerve supply, must be invoked in explanation of the different kinds of pain in the various viscera and other anatomical structures.

Etiological factors of the most diverse kind have to do with pain in its relation to time, as shown in its onset, course, and decline.

Pain is dependent upon consciousness. In profound coma, as that of surgical anaesthesia, consciousness and pain are alike wholly abolished.

When consciousness is less completely impaired there are objective manifestations of painful impressions, though the patient, upon recovering, may have no recollection of pain. Pain may be absent in shock.

Individuals usually make no complaint of pain during the period of shock following gun-shot wounds or other severe traumatism.

Under these circumstances pain comes on as shock subsides.

Etiology

Pain is:

I. Functional, or
II. Organic.

The temporary pain in over worked muscles is functional. The pain in pleurisy and gastric ulcer is organic. Pain occurs as a more or less prominent symptom under the following conditions:

1. Excessive or unduly prolonged physiological activity, either physical, as in muscular strain or fatigue, or psychical, as in the head ache which follows undue intellectual effort. The pains of parturition are physiological.

2. Traumatism of all kinds.

3. Circulatory Disturbances:

a) Passive congestion. An example of pain thus caused is to be found in thrombosis of the crural vein, formerly known as phlegmasia alba dolens.
b) Active hypenemia, for example, the cutaneous pain of local irritants, as heat, cold, mustard and the like. Pain in the region of the spleen after running is an example of visceral pain due to this cause,
c) Anaemia. Examples of this form of pain are headache upon exertion and the neuralgias.

4. Inflammation. Pain is a prominent symptom in all forms of inflammation.

5. Toxaemia. The offending substance or substances in the blood may be the result of:

a) **Infection, as in the Acute specific Fevers and Malaria;**
b) Incomplete or perverted physiologicochemical processes or the defective elimination of waste, as in the headache of urasmia and diabetes and the pains of gout, rheumatism, and lithaemia;
c) The action of drugs or poisons. Pain due to this cause may be hyperaemic, as in the head pain produced by amyl nitrite and quinine; inflammatory, as in the later stages of narcotic poisoning; purely nervous, as an abstinence symptom in morphinism and the pains of the chloral habit and lead colic.

6. Changes in the arteries. Examples of pain due to this cause are found in syphilis, chronic alcoholism, chronic lead poisoning, migraine, and aneurism.

7. All organic painful diseases, abscess, tumour, both benign and malignant, and various diseases of the viscera, whether the pain be due to changes in the organ itself or disturbance of adjacent structures by pressure or displacement.

8. Caries and other diseases of the bones.

9. Neuropathic conditions, for example, neurasthenia, hysteria, tabes (wasting and debility with hectic fever; consumption), dysmenorrhoea, and tetanus.

10. Reflex irritation, as the supra-orbital pain in indigestion and the various localized head pains of eye-strain, pain in the external auditory meatus in dental irritation, and coccygodynia in uterine disease." - Dr James Cornelius Wilson, AM, MD "A Handbook of Medical Diagnosis", 1915.

Chapter 35

The Role of Neuropathy in Emunctology

*"**And of all the personal possessions which man can attain on this earth, the most precious, is the one of a sound mind, controlling a sound body**." - Upton Sinclair, in "The Book of Life", 1922.*

*"**Deep seated mischief, never occurs in the human organism, until the digestive nerves are implicated.**" - Dr John Goodman, MD, in "Hydropathic Series", Vol.3, 1858.*

Historical Origins of Neuropathy

"Rubbing can bind a joint that is too loose, and loosen a joint that is too rigid. Hard rubbing binds, soft rubbing loosens, much rubbing causes parts to waste, moderate rubbing makes them grow." - Hippocrates of Kos, 370 B.C.

Neuropathy antecedent evolutions of drugless therapy manipulations.
The immediate antecedent of Neuropathy was Mechano Neural Therapy.
The other antecedents date back as far as Herodicus in the 5th century, who advocated exercise for the treatment of disease, and compelled his patients to have their bodies rubbed, and also was the first to lay down principles for rational, mechanical methods of treatment.

1837

Neuropathy was first made part of the Hydropathic Practice by the renowned Hydropath Dr James Manby Gully.

Dr James Manby Gully published "An exposition of the symptoms, essential nature, and treatment of Neuropathy, or nervousness".

1847

Dr. Frederick Hollick published "Neuropathy, or The true principles of the art of healing the sick: Being an explanation of the action of galvanism, electricity, and magnetism, in the cure of disease: and a comparison between their powers, and those of drugs, or medicines, of all kinds, with a view to determine their relative value and proper uses".

1873

Dr. Frederick Hollick published the book: "The nerves and the nervous a practical treatise on the anatomy and physiology of the nervous system, with the nature and causes of all kinds of nervous diseases: showing how they may often be prevented, and how they should be treated, including also, an explanation of the new practice of neuropathy; or, the nerve cure".

Around the turn of the 19th century individual physicians in America began to pay some attention to what the ancients had for centuries been saying about peripheral manipulation, and the great contribution made by these 19th century investigators was:

1. The classification of nerve and physiological impulses, set up by the Methods of Manipulation, vibration or instruments used on the body.
2. The classification of the nerve segments, corresponding to the organs and tissues in which there was a physiological malfunction or a pathological condition.
3 The classification of the rate or mode of manual application or instrument to the body according to the physiological or pathological condition.
Neuropathy was one of the Sciences created out of all these researches and investigations.

Among those who stand out as having contributed the greatest of value to Neuropathy as we know it today are: Dr Andrew Paxton Davis, MD, DO, DC., Dr Albert Abrams, MD, Dr Edgar F. Cyriax, MD, Dr John Arnold, MD, and Dr W. Wallace Fritz, MD.

Dr Albert Abrams, MD, contributed much of the foundation by his tabulation of the reflex centers, whereby organs and tissues could be contracted or dilated at will, by concussion or pressure on nerve segments, that had the desired action on the circulations.

Cyriax's studies and work, "The Elements of Kellgren's Manual Treatment," also collected papers dealing with the Lymphatic System, completed what was necessary for Dr John Arnold, MD, to form what he termed Mechano Neural Therapy.

Dr. John Arnold, MD was Professor of Histology in the School of Medicine in the University of Pennsylvania, for 5 years he carried on his research work before writing or lecturing on his findings.

He did not publish any books, but some articles are left that stated his philosophy and technique, and also a **"Table of Viscero Motor Neurons", appended to his article in the Medical News of 18 March 1905**, under the title **"The Importance of the Back in General Diagnosis."**

Dr John Arnold's observations was that: repeated brief pressure along the spinal column, arouses the reflex constrictor nerves, and brings about a certain

amount of contraction in the blood vessels of the skin, and muscles of the back in the region of the back treated.

And also at the same time produces a certain amount of dilation of the vessels of the cord.

On the other hand, continuous hard pressure along the spine arouses the reflex dilators and brings about a certain amount of dilation of the blood vessels in the skin, and muscles of the back and a corresponding contraction of the blood vessels of the cord.

And by the changes in the spinal cord impulses are sent to the blood vessels, and through the action on circulation in these vessels a healthful condition is brought about in the:

1. Nerves, then
2. Circulations,
3. Organs, and
4. Tissues.

Dr John Arnold's Method of Diagnosis, was by pressure in the grooves of the spinal column. The areas of vertebral tenderness corresponded with the vaso motor segments of he spinal cord, there exists a compensatory relationship between the spinal segments of the cord and the blood vessels leading to the various organs and tissues.

Dr John Arnold, MD in "Some Principles of Manual Therapy", New York and Philadelphia Medical Journal, 13 May 1905.

Dr Arnold offered to incorporate his work into the curriculum of several medical schools, this offer was rejected by the medical trade." - Dr Thomas T. Lake, ND, DC in "Treatment by Neuropathy", 1946.

Dr Andrew Paxton Davis, MD, DO, DC

Dr Andrew Paxton Davis, MD, DO, DC studied first the Botanical System of practice; the Thompsonian; the Eclectic; graduated from Rush Medical of Chicago in 1867 and Pulte Homeopathic College of Cincinnati in 1877. Took a postgraduate course in New York in Ophthalmology in 1880. He was a student and professor in the 1st class of Osteopathy under Dr. A. T. Still in Kirksville, Missouri, Winter 1892-93. In 1898, Dr Andrew Paxton Davis, MD, DO, was the 2nd student of Chiropractic by D.D. Palmer.

> *"Investigated, studied, graduated in, Osteopathy, and found many good things therein; but still not filling the desires I expected, we launched into the so-called Chiropractic method of spinal adjustment, and evolved Neuropathy". - Dr Andrew P. Davies, MD, DO, DC in "Neurology", 1905.*

"The word Chiropractic practice, is simply hand practice of a peculiar character to relieve nerve pressure from the spinal nerves. Having taken full courses of instruction in Chiropractic science, and having 6 years experience in its application, and having evolved from the Chiropractic the Osteopathic and Ophthalmic sciences a system we name Neuropathy". - Dr Andrew P. Davies, MD, DO, DC in "Neuropathy, the New Science of Drugless Healing Amply Illustrated and Explained: Embracing Ophthalmology, Osteopathy, Chiropractic Science", page 149, 1909.

Neuropathy: Take Off the Pressure

"This book is dedicated to the afflicted; to those who have had to submit to stereotyped experimentation from medical practitioners, whose prescriptions are the outcome of supposed efficacy in medicine for the cure of disease; to those who, heretofore, have had no choice in selecting a physician to administer to their wants; to those whose lives have hung upon the probable efficacy of a supposed remedy; to those whose friends have been the victims of the uncertainties of unscrupulous and boastful pretenders, commercial demagogues, to those who desire a betterment of their condition; to those who have the amelioration of the afflicted in view, and are willing to lay aside prejudice, doubt and abandon the use of agencies of established failure, who desire something that is rational; something that can be relied on to relieve their sufferings; that which can be applied under any and all circumstances, and in all conditions, with an assurance of satisfactory results, with the assurance of a never wavering faith of one who has spent a life in the study of the human body.

He has searched with intense interest every source of promise, through all systems, both physical and mental, for some thing reasonable, something reliable, that, when applied, would relieve and cure the afflicted.

This science: Neuropathy, is the result of the long and ardent search of the author of this book.

It is sent forth on its mission, with the assurance of its merits being approbated by all who will learn its philosophy, how to apply it as suggested herein.

In every instance where properly, and intelligently applied, it will be appreciated for its merits, and serve as an incentive to all to recommend its use in all conditions demanding relief.

Fully explaining the great facts intended, so as to be easily learned by the reader, and those who desire to know how to successfully ameliorate

human suffering in the quickest and best manner possible, without the use of drugs, poisonous agencies, but simply with means always at "hand", the human "hands", and without harm, inconvenience, or pain.

This science studied, learned and rightly applied, fills a niche never, before, filled, and embraces more than any method of healing ever presented to the world. It will go down the ages blessing humanity as the years roll on.

The better the philosophy is understood, the more easily will its application be made. It is applicable under all circumstances, and for all conditions, where undue pressure is involved, and the lack of proper nourishment are factors.

Neuropathy has to do with disease, and all diseases involve the nervous system. The disturbance of the nerves being a prime factor in all pathological conditions, all due to interference of nerve filaments, it becomes a matter of supreme interest to know how to relieve the nerves from all disturbing causes, irritation, etc., in order that they may perform their functions normally.

Disease is a result of violated law—so stated by the Maker of all law:

"And the Lord will take away from thee all sickness, and will put none of the evil diseases of Egypt, which thou knowest, upon thee." - Deuteronomy 7:15

"If thou wilt diligently hearken to the voice of the Lord thy God, and wilt do that which is right in his sight, and wilt give ear to his commandments, and keep all his statutes, I will put none of these diseases upon thee, which I have brought upon the Egyptians: for I Am the Lord that healeth thee." - Exodus 15:26

"The Lord shall smite thee with a consumption, and with a fever, and with an inflammation." - Deuteronomy 28:22

The penalty always follows.

These are not words alone, but are as that which applied in one's daily life may lead to an opening of the veil which enters into the holy of holies.

The human body was made perfect, is perfect yet, when allowed to perform its functions in a normal way.

The nervous system functions every organ in the body, sees to it that every organ, with unerring exactness, performs its allotted work, superintends every heart throb, whether we wake or sleep; it sees to it that normal functions are performed, being the media through which mind permeates the entire physical body; it signals warning when a disturbance occurs along any line of nerve filament from the brain, that something is wrong at the citadel of the mind which should be righted, and when righted, it assumes its wonted duties again.

The human body would be a chaotic mass without the nervous system.

Everything is the product of mind.

Evil thoughts culminate in evil doings. The remedy is righteous thinking.

To have righteous thinking there must be righteous training, teaching emanating from a higher source than man.

If it be a sin to be sick, the only way to be immune from sickness is to return to God's law, which is good, and only good. Its environments and influences are uplifting and tend to harmony—physically, morally, intellectually and spiritually.

The healer, under the present state of affairs, should stand between health and disease, and cry aloud, sound the alarm, and teach the ignorant how to conform to law, to the law or laws which, if observed, would render all men immune from sickness.

Nature's laws are simple and easy to comprehend; they need only to be observed to be rewarded with perfect health.

The people must come back to God, to be healthy, must conform to His laws, and then harmony will prevail.

The healer should occupy the same position as the minister, preach the gospel of health.

When the proper food supply is furnished to build up the tissues of the body, and it is properly assimilated, made into blood, the elements kept in due proportion, the fluids of the body permitted to circulate throughout the body undisturbed, no undue nerve pressure permitted, no excess of nerve function performed, the system is in perfect harmony with itself; there is health.

The correct understanding of the laws which govern the natural functions of the body, the intelligent, proper application of Neuropathy, restores the body to its wonted harmony.

The nervous functions conduct the mentality to every part of the body, so that the mind, placed in the body by divine power, might superintend, preserve and maintain harmony in the body as long as he would conform to law—the law of his being.

"Know ye not that your body is a temple of the Holy Spirit, a temple of the living God?"

"If any man destroyeth the temple of God, him shall God destroy."

These are the consequences of sin by man.

Be true to yourselves, to your brother man and to God, and all will end well, and you will be a power for good to humanity, and worthy a name.

Neuropathy, its correct application relaxes the muscular structure, frees the veins, nerves, lymphatics, capillaries, permits the onward flow of the fluids of the body, and does it in a natural way." - Dr Andrew P Davis, MD, DO, DC, in "Neuropathy Illustrated", 1915.

The Relations Between the Mind and the Nervous System

"The word "mind" is a little one, but it means a great deal, and if we strive for accuracy, as of course we should do, it means a great many different things.

No two metaphysicians ever yet exactly agreed in regard to the signification to be attached to the word mind.

The grey nerve-tissue exists in the form of aggregations of minute cells in various parts of the nervous system.

In man, by far the largest collections are found in the brain, and especially on

the outside of it, covering it as the rind covers an orange, and hence called the cortex, or the cortical substance.

Besides this large mass, spread out to the thickness of the twelfth of an inch or more over the exterior of the brain, there are masses of grey nerve-tissue in other parts, varying in size from that of a walnut to that of a small pea.

Besides the grey nerve-tissue, there is another kind of nerve-substance called the white, and which, instead of consisting of granular forms or cells, is made up of tubes or fibres.

The white nerve-substance has nothing to do with the evolution of nerve-force or mind. Its office is to transmit the nerve-force from the places where it is formed to other parts of the body.

The great mass of the brain and of the spinal cord, and the whole of the nerves that ramify through the body, consist of white nerve-tissue.

The many interesting points concerned with these categories of mental faculties do not come within the scope of the present remarks, the chief object of which is to discuss the subject of the relations existing between the mind and the nervous system.

In the very earliest times of which we have any record, and even at the present day among barbarous nations, the idea existed that the brain was not the only organ concerned in the production of mind.

Thus, the emotions were, many of them, supposed to have their seat in the heart, the liver, the spleen, the bowels.

Love, for instance, was conceived by the heart, as were also several other tender or compassionate feelings.

The liver was supposed to be intimately connected with the depressing emotions, the spleen with spite or revenge, and the bowels with pity.

So strongly was this idea implanted, and so universally did it prevail, that it has influenced the forms of speech among all nations that are not so low in the scale as not to have emotions.

Thus we say that a person has “a good heart,” the lover tells his lady-love that he “loves her with all his heart,” and the sinner when he turns away from his wickedness is said to have undergone a “change of heart.”

The influence ascribed to the liver is shown by our expressions “melancholic,” “choleric,” and by one that I heard used a short time since by a man who was complaining of an insult that had been put upon him, and who said that it made “his bile flow.”

Then we say of a disagreeable or quarrelsome person that he is “splenetic,” or that he “vents his spleen,” and we speak of a pitiless person by asserting that he has “no bowels of compassion.”

How could the notions that gave birth to such expressions arise in the human mind? Doubtless, the origin was due to the fact that, under the influence of certain emotions, there are disturbances in the organs with which they are associated.

Thus, the passion of love produces a sensation of fullness in the region of the heart, and the action of the organ is quickened.

In mental depression, or as a consequence of fits of anger, the liver is so deranged that the bile ceases to be produced, and pain is felt in that part of the body in which the liver is situated; and, when the emotion of pity is strongly experienced, a sensation of weakness, or, as it is sometimes called, a sinking feeling, is felt at the pit of the stomach.

Grey nerve-tissue, wherever it exists, is a generator of nerve-force, or mind, and it is not unreasonable to suppose, therefore, that these masses of the tissue in question, that are placed around the heart, the liver, the spine, and other organs, and in vast number in their substance, have some influence in causing the production of those emotions that make themselves felt in the parts of the body with which former universal beliefs and our present forms of speech have associated them.

We find, too, as an additional fact in support of this view, that in certain mental affections, characterized by great emotional disturbances, these ganglia are in various parts of the body the seats of disease.

The spinal cord is contained in the vertebral column, or, as it is popularly called, the backbone. It extends from the brain to near the end of the trunk, and is at its thickest portion about the diameter of the end of the little finger.

It contains throughout its whole length grey nerve-tissue arranged somewhat in the form of the letter H.

More than 9 years ago, in an address delivered before the New York Neurological Society, and entitled "The Brain not the Sole Organ of the Mind," I called attention to the fact that certain mental faculties are seated in the spinal cord.

> *"But all the grey tissue of the nervous system is not confined to the brain. A large proportion of it is found in the ganglia of the sympathetic and some other nerves, and an amount second only to that of the brain in quantity - and, indeed, in some animals larger - is present as an integral constituent of the spinal cord. And I propose to discuss on this occasion some of the more important questions connected with the qualities of the force evolved from this grey tissue of the cord, and to call attention to some of the phenomena attendant on its evolution. By the term mind I understand a force developed by nervous action. It bears the same relation to grey nerve tissue that heat or electricity or light does to chemical or mechanical action. Of the mental faculties, perception and volition are seated in the spinal cord, as well as in the cerebral ganglia."*

As we have just seen, all the manifestations of which the mind is capable in its fullest development are embraced in four groups—perception, the intellect, the emotions, and the will.

Therefore, in order that a true perception may be experienced, an organ of sense, a nerve, and a mass of grey nerve-tissue are necessary, and no other organs are required. According to Maine de Biran, Perrault reports that a viper whose head had been cut off moved determinedly toward its hole in the wall.

I have performed a great many experiments and made numerous observations relative to the matter, and have for a number of years taught, in my course of lectures on diseases of the mind and nervous system, the doctrine now set forth that, wherever there is grey nerve-tissue in action, there is mind." - Prof. William A. Hammond, MD, in "The Popular Science Monthly", November 1884.

The Manifold Therapeutic Relations of the Nervous System

"In highly-developed organisms, such as any of the lower mammals, the nervous system is of extreme importance, on account of its functions in governing the processes of organic life and in regulating the exercise of the functions of animal life. Man, in addition to these, has the exquisitely-developed nervous mechanism of the mind, whose states react in so intricate a manner upon bodily conditions. Thus it is that disease in one organ or tissue is capable of causing an infinite variety of perturbations in organs at a distance.

The further removed it is from the periphery, the greater the number of communicating fibres affected by disorder in the nervous system, and therefore the wider the distribution of secondary disturbances; but disturbance at the periphery may, by so-called reflex disturbance of a centre, simulate central disturbance in degree and area of secondary effects.

While thus the intimate connection and wide distribution of nervous tissues render intricate and confusing the phenomena of disease and of recovery, they also help us, by directing our therapy against some central disturbance, to antagonize a number of morbid phenomena with a single remedy.

The points which we have to consider specially in directing our attention to the therapeutic activities of the nerves are:

1. Nutrition
2. Special Function of Tissue Innervated

Cell Nutrition

The body being a congeries of cells, grouped into organs, each cell having, in addition to sustentation of its own life, a certain function to discharge in the economy of the whole, the nutrition of the body depends first upon the nutrition of the cells; while the nutrition of each cell depends upon its being furnished with proper materials therefore through the functional activity of some other cell.

Therefore, not only must the nutrition of each cell be provided for, but it must be kept functionally active, in order that it may do its share towards the nourishment of the others.

In truth, nutrition ought to be a broad enough term to include not only assimilation (upbuilding of tissue, or anabolism), but also the disassimilation (breaking-down of tissue, or catabolism, with expulsion of debris, or excretion), which is a necessary concomitant of the exercise of function.

We may, therefore, consider either that every cell is supplied through the nervous system with 2 sets of impulses:

1. Anabolic or Nutritive
2. Catabolic or Functional

Or that the anabolic phase of nutritive power remains with it as an inheritance from the primordial automatism, while the catabolic phase, being coextensive with function, has passed under nervous control.

With undue preponderance of cell nutrition, cell function is lost, and the whole organism, therefore, suffers a deprivation of nutritive materials.

Disease

One process may predominate in one part of the organism, the other, in other parts; as, for example, in tumours associated with cachexia and wasting, or in inflammations associated with fever.

We have already seen that in fever the thermotaxic mechanism is in disorder, in most instances probably as the result of a toxic agent circulating in the blood.

We have that disturbance, that unbalanced condition called disease; for Hypertrophy (overgrowth, i.e., excess of construction, hyperanabolism) is as much a disease as hypotrophy (want of growth) or atrophy (wasting, i.e., excess of destruction, hypercatabolism).

It is a doctrine at least as old as Hippocrates that fever is a conservative process.

It is also to be noted that the new cells of (morbid) inflammatory tissue are no longer under nervous control; they are automatic in their nutrition and incoordinate in their activity; and, although derived from the organism containing and sustaining them, are in reality parasites. They are rioters, who, having become anarchists.

Health Depends Upon a Proper Balance between Cell-Nutrition & Cell-Function

The impulse of nutrition is called forth by the exercise of function, and function is again rendered possible by the rebuilding effected.

But, unless function goes on, nutrition cannot take place.

Impaired nutrition lessens capacity for function.

Lessened function reduces nutrition.

When, by our therapeutic measures, we have restored the functional activities of the cells, we have restored that condition of the cells which sends to the equilibriating or taxic centre the needed impulse of upbuilding, and in response to

that restored normal stimulus we have a restoration of proper nutritive activity." - Dr Solomon Solis-Cohen, MD Professor of Clinical Medicine and Applied Therapeutics, Philadelphia, in "Some of the Therapeutic Relations of the Nervous System", 1891.

"Allergic-like reactions can affect any tissue in the body. The central nervous system, the brain, may be the main organ affected, rather than the skin; this is especially true of children. You don't usually get runny noses, watering eyes, itching skin, hives, respiratory symptoms or gastrointestinal symptoms. Instead you get what is called minimal brain damage. A child's brain is not working right. Moreover, even if a child does have a runny nose, allergic reactions, skin rashes and so on, as he continues to be exposed to the allergy producing substance, these common symptoms will disappear, so that you'll begin to feel that the child has outgrown his problem. But there'll be a chronic stress to the body, and this will lead to central nervous system symptoms." - Dr. William Philpott, MD, 1975.

Disturbances of the Vasomotor Mechanism As a Factor in Diagnosis and Therapeutics

Chronic Constipation

"As a rule, we attribute these to errors in diet, lack of exercise, etc.

If these cases are carefully investigated it will be found, in a large proportion of them, that there is a distinct disturbance of circulation in the lower dorsal and lumbar regions of the spinal cord, resulting in a loss of power of the visceromotor and vasomotor mechanisms of the alimentary tract.

An examination of the back in the region supplied by the posterior primary divisions of the spinal nerves will almost always reveal this condition.

If we will bear in mind the fact that no part of the organism can be out of order if its nervous mechanism is normal, and, further, that the nervous mechanism of any part responds best to any rational therapeutic measures we adopt, and aside from removing sources of local irritation which may be present in acute diseases and in which we can do little more, that in all other cases rational therapeutics must be directed to the regulation of the nervous mechanism of the part or parts involved, conceding, of course, that it is essential in every case to make our most earnest endeavours to remove those underlying causes which may be responsible for the condition treated.

Errors of diet, lack of exorcise, overwork and in sufficient sleep must always be taken into consideration, but aside from these it will very frequently be found that the constipation, headache, dyspepsia or insomnia have as their predisposing factor a disturbance of the nervous mechanism controlling the parts affected.

One of the reasons we so often fail to permanently relieve a person of chronic illness is the fact that after curing all of those predisposing conditions we fail to remove the underlying perversion of the nervous mechanism of the parts disturbed.

It is the intention of the author in this article to endeavour to impress upon the profession that it is not sufficient for the physician to satisfy himself by an examination into the physical condition of the organs disturbed, but that he must go back farther and see if there may not be some predisposing cause in disturbances of the nervous mechanism of the part.

It is probable that not one patient in ten thousand who comes to the physician for some trouble, aside from a distinct disease of the spine, receives a proper examination of the back; and from the author's experience it is doubtful to him if there are many men in the profession who are capable of detecting disturbances in the spinal cord aside from the sclerotic diseases like locomotor ataxia, disseminated sclerosis, etc.

Vasomotor Nerves

As practically all of the vasomotor nerves traverse the spinal cord, and, aside from the governing center, have their cells located in the cord (with the exception of those dilator fibers present in the cranial nerves), and as every structural or functional disturbance in the organism is either preceded by or accompanied with vasomotor disturbances, a compensatory relationship exists between the blood-vessels of the spinal cord, and those structures supplied by the posterior primary divisions of the spinal nerves, the reader will at once appreciate the fact that disturbances in different parts of the spinal cord will manifest themselves by disturbances in the circulation in the region supplied by the posterior primary divisions of the spinal nerves.

These disturbances show themselves in the beginning by infiltration, tenderness and changes in temperature in this region. If the condition persists sufficiently long, retrograde changes will occur consisting of atrophy, infiltration and tenderness along the spine; these areas being definitely marked in those regions corresponding to the disturbed circulation within the cord. In other words, no careful examination can fail to reveal that in chronic bronchitis, asthma, tuberculosis and other affections of the respiratory tract, there are in the region, between the third and seventh dorsal segments of the spinal cord, distinct manifestations of the circulatory disturbance within the cord. That these manifestations are extremely patent may be illustrated by the experience of a friend, a clinical teacher in one of the Philadelphia Hospitals, who, at the author's suggestion, last summer had his students examine the backs of a number of children, and had them tell him what they considered the conditions to be from the examination made. He was much surprised to find that even the students in the third year of their medical course were able to tell him quite definitely the probable conditions which existed in the vast majority of patients examined.

As an illustration in point, he told the writer one day that one of his students examined a child at his suggestion and reported to him that the child was suffering from some chronic disturbance of the lower respiratory apparatus.

This was done with out questioning the mother, or in any way obtaining other information. After the examination had been made and the report given, the physician asked the mother what seemed to be the trouble with her child.

The mother stated the child had had a chronic cough ever since it was 6 months old, and it seemed to be always catching cold. When the child was examined it was about three years of age, and the disturbance of the vasomotor mechanism to the respiratory apparatus was so marked that an inexperienced student immediately detected it.

It is only necessary for physicians to familiarize themselves with the location of the nervous mechanism of various parts of the body, in the proper segments of the spinal cord and to conduct careful examinations along the back to satisfy themselves that these words are true.

The author feels satisfied that if the interest of careful men can be aroused in this matter, they will be able to obtain sufficient evidence from their own observations to confirm his statements.

The author asks no more than to have this paper arouse sufficient interest to make his professional brethren carefully examine the back of every patient possible, and record their results.

The evidence that they will obtain from careful observation, together with a careful review of the physiology of the spinal cord, and especially the vasomotor mechanism, will need no corroboration upon his part.

As to literature upon the subject, the best that can be obtained are Langley & Anderson's papers published in the Journal of Physiology 1903, together with Langley's article on the “The Sympathetic and Other Related Systems of Nerves”, and Sherrington's article on the “The Spinal Cord”, in Vol.2 of "Text-book of Physiology", 1900 by Sir Edward Albert Schäfer”. - Dr John P. Arnold, MD, in “Journal of Medicine and Science”, Vol.9, 1903.

Therapeutics of Vaso-constriction and Vaso-dilatation

"Egbert Le Fevre in "Med. Rec., 25 April 1908, sketches the condition of the entire vascular system in pathological High and Low Blood Pressure.

There are 3 stages of changes in high arterial pressure:

1. Hypertonicity of the muscular coats of capillaries and arterioles;
2. Progressive hypertrophy of the muscular tissues of the cardiovascular system;
3. Diminished muscular control on account of progressive fibrosis, causing obstruction of vessels.

Treatment must consider cause and stage of the process.

We must recognize that hypertrophy is not confined to the heart, but to the whole vascular system.

All causes of irritability in the daily life must be sought and removed, such as tobacco, alcohol, improper and excessive food, etc.

Treatment should be directed to increasing the activity of the Emunctories.

Habitual excess in proteids may produce hypersensitiveness of the nervous system and reflex high tension. Other reflexes act in the same way.

When the kidney is diseased high pressure is necessary.

Baths are most useful.

Cold baths raise arterial tension and hot baths reduce it. Massage may be used to raise or lower pressure, according to the movements used." - in "The British Medical Journal", 4 July 1908.

Observations on The Regeneration of Nerve-Fibres

"We give here a brief statement of the results of some observations regarding the regeneration of nerves. References to previous work will be made in a subsequent full account.

1. Regeneration in the sciatic and crural nerves. We find that when certain precautions are taken, medullated fibres do not regenerate in the peripheral end of a cut nerve in 124 days. But medullated fibres may regenerate in the peripheral end without any connection being formed with the central stump: when such regeneration takes place, the fibres degenerate on section of the nerves which run to the tissue surrounding the peripheral stump; i.e. the regeneration which occurs in apparent independence of the central nervous system is not really independent of it. When the peripheral ends of two sensori-motor nerves are joined no contraction occurs in the muscles supplied by one of them when the other nerve is

stimulated, but when the muscular branch of the crural nerve is cut, and allowed an opportunity of growing both into its own peripheral end, and into the peripheral end of the internal saphenous nerve, stimulation of the saphenous nerve may cause a reflex contraction in the muscles supplied by the muscular branch of the crural; this is still obtained after section of the crural close to the vertebra, so that we consider it to be an axon reflex occurring in branching fibres which have grown down from the central end.

When the central ends of 2 nerves are joined together, we do not find that stimulation of one gives a reflex by impulses passing up the other to the central nervous system; i.e., apparently, union does not take place between the fibres, and neither nerve grows into the other.

We do not find that stimulation of the peripheral end of a cut muscular nerve for a period of about 15 minutes twice a day delays the time at which irritability disappears; nor is it delayed by joining the peripheral end of a sensory nerve to the peripheral end of a motor nerve. If a nerve is cut in a newly born animal, the nerve grows in length with the growth of the animal, although no union is formed between the central and peripheral ends.

2. Regeneration after excision of the superior cervical ganglion. We find that the pre-ganglionic fibres do not make functional connection with the post-ganglionic fibres of the superior cervical ganglion. Nevertheless medullated fibres regenerate in the cut branches given off by the ganglion. The regenerated medullated fibres remain intact after section of the cervical sympathetic and after excision of the ganglion of the trunk of the vagus; they degenerate if the branches themselves are cut. The latter fact suggests that the regeneration is due to some adjoining fibres growing into the branches, just as (cp. § 1) fibres from the surrounding tissue may grow into the cut ends of peripheral somatic nerves, but we have not yet obtained complete proof of this. The regenerated fibres give no effect on stimulation, and stimulation of the sclerotic causes no dilation of the pupil.

3. Regeneration after excision of the stellate ganglion. We find that after excision of the stellate ganglion, the central pre-ganglionic fibres readily make functional connection with the peripheral pre-ganglionic fibres of the cervical sympathetic but do not make functional connection with the post-ganglionic fibres of the stellate ganglion. Medullated fibres regenerate in the branches of the stellate ganglion (accelerator and vertebral nerves) although these give no effect on electrical stimulation.

4. Regeneration after removal of the ciliary ganglion. The ciliary ganglion was removed in a kitten, a small accessory ganglion being left. There was evidence that the pre-ganglionic fibres did not make functional connection with the post-ganglionic fibres, and that medullated fibres regenerated in the cut peripheral ciliary nerves independently of medullated fibres running to them from the third nerve." - J. N. Langley, H. K. Anderson, in "The Journal of Physiology", 1903.

Principles of Neuropathy And its Application

"I cannot hope to give you more than a few ideas of the principles involved in the practice of manual therapy, but I shall try to arouse your interest sufficiently to induce you to make some observations for yourselves.

I do not ask you to accept the "hallmarks" that I may have stamped on the subject personally, but ask you to investigate for yourselves and draw your conclusions from the evidence you obtain.

There are some other therapeutic measures that we have neglected.

For instance, I may cite the use of heat and cold. We all know that valuable results are obtained by the application of the hot water bag and the ice bag.

There is no doubt, not only from my own experience and that of others, but from abundant literature, that we have a valuable therapeutic measure in manual therapy.

We get out of college with several erroneous ideas in regard to practical work. In the first place we somehow or other feel that it is rather beneath our dignity to place our hands on our patients for the purpose of treatment. This is a mistaken idea.

There are many things we have to do to help our patients get well that may seem beneath the dignity of the physician, but so long as they are a part of the physician's work, they are well worth doing.

Another reason has been the prevailing idea that muscular force and a great deal of time was necessary in applying manual treatment. This is entirely erroneous.

The results of manual treatment are recognized. We know very well that massage, Swedish movements, and exercise produce serviceable results in the treatment of disease.

We know that very often when we cannot cure a patient by the ordinary methods of prescribing we send the patient to a masseur and the patient gets well.

Naturally, with the egotism that belongs to most individuals, we take the credit of curing the patient, though the masseur should have some of it.

If patients get well by this method, if they get patients well when we fail, it seems to me that it should be forced upon us that here is a therapeutic measure capable of much good, and the question should naturally arise, is there not a larger field and is there not something that we might do better than can be done by the masseur?

Some years ago I noticed that the moment you put a muzzle, such as is commonly used in the laboratory, on a dog, no matter how violent the animal was it became quiet.

In making a large number of observations upon animals under these conditions, and in studying the physiology of the results of pressure upon various parts of the body, I found that pressure upon the occipital nerves produced a certain amount of cerebral anaemia.

This served to explain why the animal became quiet. You will find in patients, if you will take the trouble to make the observation, that light continued pressure over the occipital nerves produces a peculiar quiet, and they often say they feel as if they would like to go to sleep.

If we carry out these observations a little more systematically we find that pressure along the spinal column and in certain regions of the neck does produce distinct changes in the circulation in the central nervous system.

This is well recognized empirically, but we have not had heretofore the knowledge which would enable us to apply it with that certainty and system which would give us the ability to localize the effects in certain regions.

I must say that the experimental evidence of this is for several reasons rather unsatisfactory to demonstrate to those untrained in physiological work.

One of these is that the spinal cord is very richly supplied with blood, and experimental work upon the cord is unsatisfactory to the general observer, because the amount of haemorrhage is such that the results are very much obscured.

The study of the development of the organism and the fundamental laws which determine the activity of every living organism teaches us that there are principles which serve to explain the results that can be obtained by pressure along the spine.

The body is developed practically as two double tubes, one, the anterior body tube which consists of the trunk and contains the primitive intestinal tube; posteriorly, that region supplied by the posterior primary divisions of the spinal nerves, consisting of the muscles of the back in a region about three inches on each side of the spinal vertebrae, the vertebrae, and the ligaments makes up the outer tube and this contains the neural tube.

We have long recognized the fact that the circulation in the anterior body tube, or the muscles and skin of the trunk, was in a measure compensatory to the circulation of the organs within (developed from) the inner tube; e.g., the application of a mustard plaster over a pleurisy or a congested liver is of service in relieving the congestion.

We have never applied the same principles to the circulation in the skin and muscles of the back as compensatory to the circulation in the spinal cord.

This thought occurred to me in working on this subject, and I might say that that is one of the fundamental principles of the application of manual treatment.

I have seen so many times agents that produce a dilatation of the blood vessels in the skin and muscles of the back relieve congestion of the spinal cord that I came to the conclusion, I might say empirically, that there must be some sort of a compensatory relationship between the circulation in the 2 parts.

That these results were produced has frequently presented itself to me as evidence in practical work, and to make the matter more clear I carried out a series of experiments some 8 years ago which shows very distinctly that pressure along the back does modify the circulation in the cord. We find that internal conditions, no matter what they may be, manifest themselves by certain distinct signs that may be observed by the proper examination of the back.

For instance, I have not seen any case of dyspepsia, no matter of what type, in which there was not distinct evidences in the mid-dorsal region of a disturbance of the nervous mechanism controlling the stomach, and here we have to realize that fact that we have not only a nervous mechanism to the blood vessels of the stomach, but one controlling in part the musculature of the walls of the stomach itself.

If we examine a case of asthma we will find the disturbance in the upper dorsal region between the third and the seventh, and so on throughout the whole list of diseases.

With a subject so broad as that of therapy I cannot hope, in this brief talk, to give you any more than a faint idea of what we may be able to determine and what we may be able to do, but there is one thing I do hope to do and that is to arouse your interest sufficiently to have you make observations yourselves, and I am quite sure if I can do that I will need say little more, because the evidence is so plain that you will have no difficulty in corroborating what I tell you.

Things that are too trifling or of too little consequence to be carefully observed and carefully analysed in examining the sick.

We must recultivate our ability to observe carefully.

If you will take the trouble to examine the backs of your patients you will find that you will get data of value not only as to the conditions that exist, but also data which will be extremely serviceable to you in curing your patients.

We know very well that if a patient comes into the office and tells us the history of the case with the belief that he is suffering from and such condition we are very apt to be swayed in our judgment and come to conclusions that are entirely unjustified by physical signs present themselves.

Make the examination of the patient and then modify your judgement by the history.

You will find that you very much more likely to come to the correct conclusion if this conclusion if this plan is followed.

How Neuropathy Affects the Organism

If we take a few moments in consideration of some of the elementary principles of biology we realize the fact that every living organism is a mechanism which expresses its activity in response to changes in the conditions that surrounded.

In other words we are machines that respond to changes in conditions that surround us.

If an amoebae is placed under the microscope and observed closely, it will show in a simple way all the of the fundamental principles which serve to explain the activity the higher forms animal life.

For instance it moves across the stage of the microscope.

If in any way we alter the conditions surrounding the cell, as by pricking it with a pin, it will respond by actual movements.

The prick pin, will produce contraction the protoplasm.

If a pseudo podium happens to be projecting from the opposite side from the pin prick it will immediately be withdrawn, showing that the cell possesses the power conductivity.

This mass of protoplasm responds to external irritation.

It possesses one the fundamental characteristics of living material, irritability.

It possesses conductivity.

It is found after time divide by simple cell division, and instead 1 there are 2.

It possesses the power reproduction. If the water which surrounds the amoeba is examined we will find that oxygen is absorbed and that carbonic acid gas given off (respiration). It also takes into interior certain materials which are found in the water which surrounds it, digests them, assimilates them, and uses them for the production energy.

We will also find that the protoplasm this little cell constant motion, and very many the amoebae we find clear space that has the property of rhythmically contracting and relaxing.

This produces certain amount constant motion the protoplasm. In other Words, the amoebae has circulatory apparatus.

This corresponds the circulatory apparatus in the higher animals.

In man we have to deal with a social cell community made up simple individuals which correspond the amoebae. And we should approach the study physiology and anatomy and the study disease from this standpoint and look upon the human being simply cell community made up large number simple organisms, realizing that this simple cells are governed by the same laws and principles, modified, but not altered, because in the social organization of the cells they have undergone certain changes in form and specialization of function.

In the development of the organism of the higher animals, just as there is in the development of every social organization, certain individuals in the organism develop peculiarities which fit them best for the work they have to do, and very often they lose some of the primitive attributes.

In the organization of the higher forms of animal life, a certain group of cells became specialized in two of the characteristics of the simple cells, and these irritability and conductivity.

Irritability is the capacity to respond to changes in environment, and conductivity is the ability to conduct the results of changes in environment to different parts of the organism.

Thus in the higher forms of animal life is developed a group of cells which make up the central nervous system.

The community cells which make up our bodies becomes so complex from the number of individuals present that it becomes necessary for some governing mechanism to be developed in order to control the activity of the various cells and prevent damage from occurring in distant parts of the organism.

The nervous system that part the organism which responds most readily to changes in external conditions and which enables us to adapt ourselves the conditions which surround us.

We all realize the fact that we go into a cold region we preserve our body temperature within very narrow limits, and the same true we are exposed excessive heat. This brought about by the regulation the calibre of the blood vessels and the production and distribution heat. This accomplished by the central nervous system.

This bing the fact brings this point mind; may we not systematically change the environment the body that we may in a measure modify not only the normal conditions of the body, but also be able to govern pathological conditions?

That we may borne out by clinical, embryological, and physiological evidence.

Physiologists have for years recognized that, the vasomotor system consisted certain cells located the spinal cord and the medulla which send impulses to the muscular walls of the blood vessels, and also of sensory nerves which transmit messages from different parts of the body to the central nervous system.

They have also recognized the fact that certain kinds of stimulation, or changes in external conditions, bring about dilatation of the blood vessels, and certain others, contraction.

For instance physiologists have recognized that the rapidly interrupted electrical current produces contraction of the blood vessels in the part supplied.

If instead of the rapidly interrupted current we apply the continuous current, after a brief contraction dilatation of the vessels occurs.

The same holds true of mechanical stimulation.

It was with this thought in mind that I was able to explain satisfactorily that this is the result obtained in treatment by manual pressure along the spinal column.

In other words, that repeated, brief pressure along the spinal column arouses the reflex constrictor nerves and brings about a certain amount of contraction in the blood vessels of the skin and muscles of the back in the region of the back treated.

That this does occur can very easily be shown by very simple experiments, and it also undoubtedly produces at the same time a certain amount of dilatation of the vessels in the cord.

On the other hand continuous pressure along the spine arouses the reflex dilators and brings about a certain amount of dilatation of the blood vessels in the skin and muscles of the back and a corresponding contraction of the blood vessels in the cord.

It may seem that this is a broad statement to make with very little actual evidence that could be demonstrated.

However, that these results are obtained is borne out by actual experience in the treatment of patients; it is borne out by embryological evidence and experiments in physiological work.

Whether this is the true explanation or not carries with it very little weight.

The most important thing to bear in mind is that we get results, but one thing you can be quite sure of is that if we apply manual treatment along the spine, used with judgment which should come to us because of our education, we can do no harm.

Why should we neglect a valuable therapeutic measure for sentimental reasons or because we feel that we may be called masseurs?

Our real object in life is to get our patients well no matter what means we use, and if we cannot do that we are not good doctors.

You need not fear what the people will say about you.

There has been a great deal of condemnation of manual therapy which has been the outcome of ignorance of its real value and ignorance of the proper methods of application.

In the ordinary application of manual therapy it takes no more time than it takes us to write a prescription. The idea has prevailed that it took from 30 minutes to 1 hour to treat a patient. We have had ground into us that muscle is needed, and the harder we do it the better it is for the patient. This is not true.

Manual therapy is probably one of the sharpest instruments we have, and it must be applied with brains and not with muscle.

A great many patients that we have to treat require no more than the pressure that would be produced by 227 grams weight and less than 10 minutes time.

That this does produce results is shown from day to day by the fact that patients get well, patients who have been under the ordinary therapeutical measures not only for months, but sometimes for years.

There is no reason why I should be able to do more than any of you may do. What I have done in the treatment of some cases that have been looked upon as incurable, can be done by any of you if you will take the trouble to observe your patients and apply the methods.

It is not necessary for one to have brain power above the capacity of the ordinary individual or doctor, but it means that we must take the trouble to investigate and make use of all those things which are of value in the treatment of disease, and we must blame ourselves if we neglect any of those things which may help us get our patients well.

If we will take the trouble to approach all of these things with an open, clear mind, with the idea of getting everything of value, and not allow our prejudices to interfere with our judgment, we shall have performed our duties to our patients and to ourselves, but if we allow our sentiments to vitiate our judgment we shall have failed in our duties physicians.

If in your practice you will take the trouble to examine the backs of the patients and discover all the physical signs you can, you will find there are lots of things of the existence which you had no idea.

A large class of patients come in with complaints of some minor trouble, such as an occasional attack of indigestion, constipation, etc., **and when you examine the back in these cases you will find some fundamental disturbance of the nervous mechanism controlling the part the organism affected.**

I believe there are numbers of people who go through life constantly or periodically going to the doctor for what they consider some minor condition, who have had since childhood a disturbance of the nervous mechanism controlling the part of which they complain.

Above all, our duties as physicians are not alone those of curing patients when they get sick, but our chief duty is to prevent people from getting sick.

And if you will take the trouble to examine the children that are brought to you and cure the minor disturbances, which do not always show themselves by distinct sickness, but which may determine sickness later in life, you will do much to further our progress toward that goal which is the highest duty the prevention of disease." - Dr John P. Arnold, MD, in "New York Medical Journal", 13 May 1905.

The Relation of Manual Therapy to the Vasomotor Mechanism

"**The Vasomotor Mechanism** - In the organization of the complex community of individual cells which constitute the body of man and the higher animals, we must realize the importance, from a practical standpoint, of the division of labour and specialization of function.

We must also realize the fact that this is the result of the action of external agencies, structurally and functionally, upon the units which compose this organized and systematized cell state.

As the number of units becomes greater, there comes a time when it is absolutely necessary, for the proper organization of the cell community, that there should be a certain group of cells set aside, both in structure and in function, which will enable all parts of the organism to be brought into communication with each other.

That part of the organism is necessarily developed into what we commonly call the nervous system.

Many of the functions of that system may be looked upon as a higher development of this organized community of cells, as in all communities of living things, those functions which are necessary for the nutrition of the units and the removal of their waste products are most important.

So it is in the development of the animal organism that those nerve cells which subserve the functions of nutrition are first developed, and are of the utmost importance for the expression of all of those activities which serve to distinguish living things of the higher order.

Thus it comes about that in the development of the nervous system, the vasomotor mechanism is first developed and first perfected in the growth of the organism, for upon this mechanism depends the development of both function and structure and those activities which we consider characteristic of the higher forms of animal life. We, therefore, find that in the very early stages of embryonal development there appear in the anterior horns of the spinal cord, between the second dorsal and second lumbar vertebra, neural cells which have for their function the maintenance and preservation of a condition of partial constriction of the muscle cells in the walls of the arteries, which is absolutely essential to the proper distribution of the blood throughout the various parts of the organism.

These cells maintain that amount of contraction which is necessary for the maintenance of what we usually call "arterial tone", which is just as essential an element of the circulatory mechanism as the beat of the heart.

As during the progress of development the organism increases in complexity, there appears another group of nerve cells which are distributed in limited numbers through out the above-mentioned region of the cord, and especially in the sacral, cervical and the region of the medulla, a group of cells which in some way, as yet not fully under stood, bring about a comparatively complete

relaxation of the muscle cells of the blood vessels, and through their activity very markedly increase the circulation to any given part.

The group of cells first mentioned are the vasoconstrictors, and are in a condition of constant activity in order to preserve arterial tone.

The second group are called the vasodilators, and are only occasionally active, in response to the demands of various parts of the organism for more blood, this demand depending almost invariably upon the necessity of augmented functional activity for more blood or a necessity upon the part or parts to protect themselves from the injurious action of germs or other external agencies.

It seems to be quite clear, from experimental and clinical evidence, that there exists in the medulla oblongata a group of neural cells which have as their function the regulating control of the vasomotor cells in the spinal cord.

In addition to this governing mechanism, it is also evident that there are ingoing pathways from various parts of the body which can reflexly modify vasomotor activity, as was shown by Marey in 1850.

Reflex vasomotor changes can be produced by mechanical irritation of the skin. By one method reflex constriction of the blood vessels can be brought about, by another reflex dilatation.

Further, careful research has demonstrated the fact that there are sensory pathways which modify vasomotor activity, and are probably best classified as reflex constrictor and reflex dilator paths, and a third group, the depressor paths, which have their origin only in the tissues of the heart, and need not enter into consideration here.

From the data obtained in physiologic research, as well as that from clinical experience, it is evident that every expression of activity upon the part of the animal organism is due to changes in the conditions which surround it.

In other words, changes in temperature, pressure, light, etc., have a distinct effect upon the functional activity of the organism.

As has been stated previously, that part of the organism which is most susceptible to changes in external conditions of whatever sort is the vasomotor mechanism, because upon it depend the variations in functional activity of every part of the body.

Among those changes in external conditions which affect the functional activity of the body, one of the most important is probably changes in mechanical pressure of whatever sort that may be applied to the body.

It has been shown by the researches in physiology that repeated very light

pressure, if not continued too long, arouses the constrictor mechanism to the blood vessels, while a continuous pressure arouses the dilators.

Now it so happens in the development of the higher forms of animal life that there is, as has been shown, **a compensatory relationship between the circulation of the tissues of the trunk and the internal viscera.**

If the same principle be applied to a study of the circulation in the spinal cord in comparison to that of the tissues supplied by the posterior primary divisions of the spinal nerves, it will be seen that, briefly speaking, the body may be considered to be made up of 2 external tubes and 2 internal tubes superimposed, the lower two consisting of the body cavity, which contains the alimentary tube; the other consisting of the spinal cord with surrounding structures composed of the vertebrae and the muscles and skin supplied by the posterior primary divisions of the spinal nerves.

Just as external applications, as in the form of a mustard plaster, which acts as an irritant and dilates the peripheral blood vessels, may relieve congestion of the liver, so external applications in the region supplied by the posterior primary divisions of the spinal nerves may reflexly modify the circulation of the spinal cord.

As it has been shown by physiologic research that the continuous application of light mechanical pressure reflexly calls into activity the dilators and repeated brief applications of light mechanical pressure call into activity reflexly, the constrictors, it becomes apparent, even from theoretical considerations, that repeated brief applications of external manual pressure along the spine bring about reflexly a constriction of the blood vessels in the region of the back supplied by the posterior divisions of the spinal nerves, and in consequence of the compensatory relationship between this circulatory area and that of the spinal cord a dilatation of the blood vessels in the cord is produced.

Conversely, a continuous pressure along the spine, which produces a dilatation of the blood vessels in the area supplied by the posterior primary divisions of the spinal nerves, is accompanied by a comparative contraction of the blood vessels in the cord.

In other words, repeated brief applications of mechanical pressure along the spinal cord cause a dilatation and a consequent increased blood supply to the cells within the cord.

On the other hand, continuous pressure along the spinal cord brings about a contraction of the spinal blood vessels and a decreased supply of blood to the nerve cells within the spinal cord.

As a practical thought in regard to the application of these principles to the treatment of disease, it may be said that in all chronic conditions, excluding acute exacerbations, there is a condition of anemia, or partial starvation, of the nerve cells in the spinal cord, while in acute conditions there is the opposite, a congestion or dilatation of the blood vessels within the cord.

It, there fore, becomes apparent, and this is not only shown by clinical experience, but is the result of experimental observation, that in chronic conditions

repeated pressure in the proper region of the cord and continuous pressure in the proper regions of the cord in acute conditions, as also in acute exacerbations of chronic conditions, is one of the most efficient measures for the restoration of normal function.

If the physician has the proper practical knowledge of the physiology, he will realize the fact that **there can be no pathologic condition in the organism which does not primarily, or secondarily depend upon a disturbance of the nervous mechanism of the part or parts concerned. In other words, no part of the organism can be abnormal if it has a normal nervous control. It, therefore, becomes apparent that in order to restore normal condition to any part or parts of the body it must be brought about through a regulation of its nervous mechanism, and the most important part of this is the regulation of its vasomotor mechanism.**

This therapeutic measure, so easily applied by one thoroughly acquainted with the physiology of the central nervous system, is a measure which has been strangely neglected by the medical profession, and it remains to our discredit that we have too long held the idea that to place our hands upon our patient's body, outside of the examination conducted, is beneath our dignity.

As a result of this, we have allowed a valuable therapeutic measure to pass into the hands of others, and we often wonder why others succeed in curing patients when we have failed.

The time has now arrived when the profession must realize that, in order to avoid the dangers of the application of therapeutic measures by others, the profession must take up those things which have even a modicum of value, and apply them with discretion.

In regard to the therapeutic method under discussion here, there is a vast field for the thoughtful physician to consider, and he who fails to take up this matter now, if he lives long enough, will realize the fact that he lost an opportunity.

I make this statement, as the result of the experience of a number of years in practice, teaching and experimental work in physiology.

There is no intention upon the part of the author to advocate manual therapy as a panacea for all ills, but he does believe, from the existing literature, his experience clinical and experimental, that here is a vast field of therapeutics which has been neglected by the medical profession, and which offers untold opportunities for future work.

We are at present upon the verge of a vast field of therapeutic usefulness, which is at present absolutely unrealized.

As in other fields of science, we are in a transitional stage and we cannot say today that the present condition of therapeutics is at all satisfactory.

If we may hope for scientific developments in the cure of disease, it must be along the lines of the physician's control of the external conditions which surround the organism, no matter what they may be.

We must also realize the fact that in dealing with the abnormal human animal we have to contend with conditions which are not under our absolute control,

aside from this there are cases every day under the author's observation, conditions which have endured from childhood, which predisposes to abnormalities in the adult life, which are due to easily recognizable disturbances of the nervous mechanisms of different parts of the body, as it is hoped may be made plain in a future paper.

If these conditions are corrected, and if nature is only in a measure helped over the hard places, she will take charge of matters, and we can feel assured that the ultimate results will be satisfactory.

The question may arise in the minds of those who read this series of articles as to the authority upon which the conclusions are based.

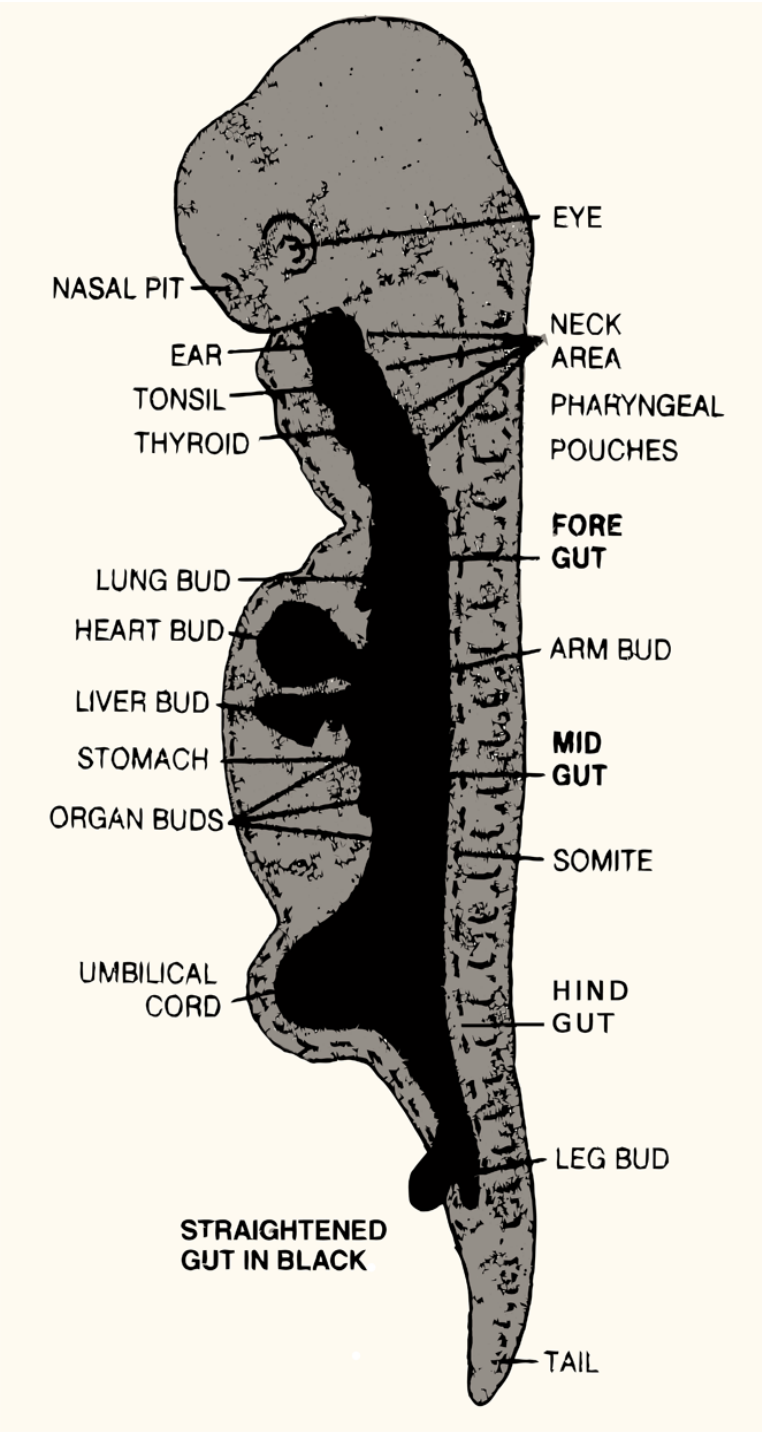
It may be well to say here that the authority for these statements is probably present in the library of the majority of those physicians who have an adequate library, and those which may not be found in books can readily be demonstrated in the laboratory by the author of this paper, and not only in the laboratory, but as the result of clinical experience, which demonstrates from day to day the truth of these statements.

It only remains to be said, in the conclusion of this paper, that **it is an unquestioned fact that the average practitioner of medicine is totally unfamiliar with the existing literature on manual therapy and physiology.**

As an instance of this fact, I may state that less than a year ago a friend of mine in the profession, to whom I talked on the question of the relief of gall stones, in a certain proportion of cases, by manual therapy, was entirely unfamiliar with the fact that in a book which he had possessed for 15 years there was the unquestioned statement by such authorities as Sir William Murrell, and George Harley, of England, of the cure of a number of cases of gall stones by crude massage.

This is only one of the multitude of instances that I might adduce that the average practitioner is entirely ignorant of literature easily accessible, which must, m the thoughtful man, if he becomes familiar with it, lead to practical results in the cure of disease." - Dr John P. Arnold, MD in "The Dietetic and Hygienic Gazette", Vol. 20, 1904.

> ***"Any System of Healing will be correct, when it follows the morphological laws of the embryonic development. The embryo grows, and develops cavities first; Visceral, Thoracic and Cranial. Around Fluid Fulcrums, formed by organized fluid forces, and Membrane Boundary interaction. The cavities, are then, connected via a Circulatory System, and finally the Scaffolding of the Musculoskeletal System, that it all hangs on, is built. This dynamic; the whole fluid field, then folds and unfolds throughout life. It is, a biodynamic fluid process, the adult body contains that original embryonic matrix, or blueprint for health and healing, within the tempo of Primary Respiration. The Body Heals Itself by these Natural Laws. The originality of the embryo, may be hidden, but it is nonetheless present. All Trauma Processes, are Embryonic Processes."*** *- Dr Michael J. Shea, PhD in "Craniosacral Therapy", Vol. 2, 2008.*



The Organs, limbs out from the bowel during the embryonic Stage
- in "Dr. Jensen's Guide to Better Bowel Care: A Complete Program for Tissue Cleansing through Bowel", 1998

The Common Tegument

"**The assimilation of food entails the removal of waste.**

In consequence of the poisonous characters of these waste matters, they are eliminated from the body by various Emunctories, and the amount at one time within the organism is kept under ordinarily by the action of one or more of the excretory systems.

Water is excreted by the skin, the kidneys, and the lungs.

A certain flow of water through the body is essential to the elimination of waste products, many of which are held in solution.

Carbonic acid finds its way out of the body chiefly by the lungs.

Nitrogenised matters pass off by the skin as well as by the kidneys; but, under certain circumstances, especially of impaired respiration, carbonic acid passes off by the skin; and uraemic diarrhoea is far from uncommon in the subjects of chronic renal disease.

We are too much inclined, indeed, to regard the functions of the different excretory organs as being highly specialised, and to lose sight **of their common characters of the unity of function which accompanies their homologies of structure.**

The different excretory organs of the body are but involutions of the common tegument, and retain in their most elaborated form their primitive characteristics.

In the lowliest forms of life, the tiny organism taken as food can be seen to melt away in the speck of sarcode by which it is engulfed.

The waste products pass away from the general surface, and no one part can be recognised as being more especially functional than another.

A little higher up, we find a simple short tube, which may be turned inside out, and its intestinal canal converted into a tegument, and its external surface into a digestive canal, apparently without disturbance to the animal.

As we ascend, the scale of creation and evolution gives us more elaborated forms; we find that different portions of the general surface have undergone modifications; certain parts have become limbs, organs of progression, while others again have been converted into organs of excretion.

We find that one deep involution of the general surface has become a gastric pouch, which in time becomes a long digestive track, along which are secondary involutions, giving us the salivary glands, the liver, and the pancreas.

Another involution furnishes the urinary apparatus, the first sac forming the bladder, with its secondary involutions the ureters and kidneys.

In the desquamation of the uriniferous tubules of the kidney during the cutaneous exfoliation of scarlatina, we find a marked clinical instance of the relations of the skin to the epithelial lining of the kidney.

When we come to consider the community of origin of the various excretory organs, we can the more readily comprehend the unity of function which underlies their apparent specialisation.

This is no mere hypothesis, nor pure induction unsupported by facts.

We are all familiar with the fact that, when there is a defective elimination or excretion of bile by the liver, or when the bile-duct is obstructed by a ligature, the bile passes into the circulation generally, and is found in large quantities in the urine, as well as being excreted by the skin to such an extent as to tinge the linen.

Not only so, but it has been found in the pancreatic juice and the mammary secretion.

Urea was found in the sweat by Schottin in cholera collapse, where suppression of urine is common.

Further examinations were made by different observers, until it has been found that, in the presence of urea, the phosphates and chlorides of the alkalies, the constituents of sweat, are those of urine.

Leube has shown that there is such a relation existing between the skin and kidneys in function, that, when the skin is active, the kidneys secrete less than their normal amount of urea.

An offensive odour of the breath is commonly found along with inaction of the bowels or skin.

We have, indeed, abundant evidence of the capacity of one Emunctory of the body to supplement the function of another when impaired or suppressed.

When there is any impairment in the functional activity of the kidneys, the resort to supplementary action in other excretory organs is alike the refuge of nature and of art.

Where there is imperfect water elimination, we at once act upon the skin and bowels, and excite them into increased functional activity, to compensate the defective action of the kidneys.

It is not, however, in water-elimination alone that efficient aid can be furnished by exciting other organs into high activity,the same holds good of the solid matters of the renal secretion.

If by our measures we can keep clown the amount of nitrogenised waste in the system, until the kidneys are once more efficient, the organism is tided over a period of mortal peril; if our measures be insufficient from any cause, then the individual perishes-poisoned by self-made waste.

We have abundance of evidence to show us clearly that the efficient elimination of waste matter is an important factor in blood-formation, and that the treatment of anaemia is not the simple matter of giving liberal supplies of food together with chalybeates (mineral spring waters containing salts of iron)." - in "Excretion and Therapeutics", The British Medical Journal, 16 January 1875.

Note: This selection, is placed here to remind and to reaffirm, this important anatomical fact. For the full text of this article please see: "Emunctories & Therapeutics", in Chapter 7.

The Importance of the Physical Examination of the Back in General Diagnosis

"In the physical examination of patients one very important part of the body is almost entirely neglected, and in general diagnosis this neglected part of the body is one of the most important to be examined, namely: the back.

In every case of disease, whether acute or chronic, marked indications will be found by a careful examination of the spine in the region supplied by the posterior primary divisions of the spinal nerves corresponding to those segments of the spinal cord from which the affected parts derive their innervation.

No part of the body can be functionally or structurally diseased without there being a disturbance either primarily or secondarily in those segments of the cord from which the part receives its nerve supply, and these diseased conditions invariably express themselves by indications which can be readily detected along the spinal column by a careful examination.

> *"In 50 cadavers with disease in 139 organs, there was found curve of the vertebrae, belonging to the same sympathetic segments as the diseased organs 128 times, leaving an apparent discrepancy of 10, in which the vertebrae in curve belonged to an adjacent segment to that which should supply the diseased organs with sympathetic filaments. Sympathetic disturbances are just as likely to cause functional or organic disease in viscera, by altering the blood-supply of viscera, through vaso-motor spasm." - Dr Henry Winsor, MD, in "Sympathetic Segmental Disturbances - II. The evidences of the association, in dissected cadavers, of visceral disease with vertebral deformities of the same sympathetic segments", The Medical Times, page 267, November 1921.*

The question will be immediately asked as to what physical signs may be elicited which indicate these conditions?

In the first place I may state that there are so few people in perfect health that it is seldom that one sees a perfectly symmetrical back.

There are few people who are not compelled at some time during their lives to seek the advice of a physician, and in all of those cases in which the individual struggles through life with some crippled organ there will be found expressions of distinct impairment of the nervous mechanism of the parts involved which are invariably indicated by a careful examination of the back.

In all of the cases of chronic disease which have come under my observation there have been disturbances of the nervous mechanism of the disordered part, usually dependent upon a deficient tonus of its blood vessels which is the result of a deficient blood supply to the segments of the spinal cord from which the vasomotor nerves arise.

If the back of a perfectly healthy individual is examined it will be found that,

with the body placed in an upright, sitting posture, with the hands placed symmetrically upon the knees, the spinous processes will present a vertical line without deviation.

There will be no indications of prominent or depressed spinous processes aside from those normally found in the 2 anterior and 2 posterior curves in the spinal column.

There will be no tendency to an abnormal separation of spinous processes due to relaxed ligaments or disturbances of the erector spinal group of muscles, and the normal back will be found to be symmetrical if we make due allowance for the rather greater development of the musculature on the right side of the body, especially of the arm and shoulder.

If the patient is then placed in a recumbent position on the right side, with the head slightly elevated, there will be found in the normal individual a smooth, well developed group of muscles along the left side of the spinous processes all along the vertebral column, and there should be an absolute absence of tenderness or contracted bundles of muscle fibres which roll under the palpating finger, and vary in size from that of the diameter of a knitting needle to the thickness of the thumb. The same should be found along the right side of the vertebral column when the patient is placed upon the left side.

The palpating hand should be placed upon the side of the spinous processes toward the physician when he stands facing the patient.

The object of placing the patient in the lateral recumbent position, with the head slightly elevated, is to relax the muscles of the part examined.

After the thorough examination of both sides of the back the patient should be placed in a dorsal position, with the head upon a level with the trunk, and an examination made of the muscles of the neck, which, as those of the spine, should be in a normal individual perfectly elastic, smooth to the touch and painless upon moderate pressure.

These remarks apply, of course, to a perfectly normal, healthy person.

As has been said before, these conditions are rare, and those who come to seek the physician's aid come because they have some complaint.

It will, therefore, be found in these cases that the examination of the back and neck will reveal conditions very different from those found in the normal, healthy person. A very common class of cases which come under the doctor's observation are constipation and disturbances of the digestive apparatus.

Many of these cases, of course, are due to excessive or injudicious eating, lack of exercise, bad habits, etc., but in all cases of disturbances of functions of the stomach indications will be found by an examination of the back between the 4th and 10th dorsal segments of the spinal cord; and in cases of chronic constipation, accompanied as they are most frequently by disturbances of the functions of the stomach, additional indications will be found in the lower dorsal, lumbar and sometimes in the sacral regions of the cord.

This class of cases is simply quoted as an example of what may be found in an examination of the back, and is applicable to all of the diseases acute or chronic,

which come under the observation of the physician, varying only in the localization along the vertebral column which corresponds to the disturbed part.

These indications are marked by slight lateral deviations of the spinous processes, atrophied erector spinae muscles, irregularly contracted bundles of muscle fibre, which are nearly always tender to the touch when rolled under the palpating finger, and relaxed interspinous ligaments indicated by prominence or depression of one or more spinous processes.

As these indications are always found in the region of the posterior primary divisions of the spinal nerves which arise from the segment of the cord which supply the organ or part affected.

It seems logical to assume that they are indications of disturbances of the functional activity of those segments, and this assumption is borne out by our more recent knowledge of the functions of the spinal cord.

I would advise that each reader thereof in caring for his patients carefully examine the spine, when he will be able to satisfy himself that these statements are borne out by experience, and that a careful examination of the back will very often enable the physician to determine the existing conditions in the patient's body with little reference to what the patient may have to say in the way of a description of symptoms, etc.

With an intelligent class of patients the physician will have no difficulty in persuading them to allow him to make the proper physical examination, and they will often be grateful for the care that he has taken in investigating their cases.

Where possible, direct inspection of the bared back should be made.

I believe that if the readers of this paper will make an earnest endeavour to investigate this matter for themselves they will find much of interest and profit, and will be in a position more ration ally to treat their patients.

As it is somewhat difficult to find in the ordinary text-books the data essential to the location in the spinal cord of the nervous mechanisms of different parts of the body, I have appended here to a brief description of the nervous mechanisms of the different parts of the body and the segments of the cord from which they arise. It must be borne in mind that the segments of the cord physiologically considered are 31 in number and correspond to the 31 pairs of spinal nerves and not to the vertebrae.

Further, the indications to be found on examination correspond to the exit of the spinal nerve and not to the location of the segment of the cord in the spinal canal.

For example, the sacral segments of the cord are located about the 2nd or 3rd lumbar vertebrae, but the indications are found over the sacrum at the exit of the nerve or in the muscles supplied by it.

All of the functions of the body are regulated by a mechanism consisting of an orderly arrangement of neural cells with their prolongations, the neuraxones, and dendrons with their branches the dendrites, so that messages are sent into the nervous system by the dendrons and dendrites, and messages are sent out from the central nervous system by the neuraxones: messages which regulate the functional activity of the various parts of the body and which change in response

to alterations in external conditions surrounding the organism.

In the interpretation of this article it should be borne in mind in contradistinction to the ordinary anatomical consideration, that dendrites and dendrons are used exclusively in reference to those processes which carry messages to the neural cell body, while the term neuraxone is used exclusively to those processes which carry messages away from the cell body.

One of the most important parts of the nervous system, and the one upon which the functional activity of all of the cells of the body depends, is the circulatory system, which includes the circulation of the blood and lymph.

The mechanism which controls the contraction and dilatation of the blood and lymph vessels is called the vasomotor mechanism. It consists of dendrons arising in all parts of the body which go to neural cells in the central nervous system, and neuraxones from cell bodies in the central nervous system which go to muscle cells of the vascular apparatus by which the supply of nourishment and oxygen to every part is controlled and the waste products removed. As typical of the general arrangement of this nervous mechanism that which supplies the blood vessels may be referred to. In this we have to consider 2 sets of ingoing paths and 2 sets of outgoing paths. In the medulla oblongata, in the floor of the 4th ventricle, there is a collection of neural cell bodies arranged in two groups.

One group, which has the control of Vasoconstriction, and the other which controls Arterial Dilatation. The first is called the Vasoconstrictor Nucleus and the second the Vasodilator Nucleus.

These 2 nuclei taken together are called the Vasomotor Nucleus.

The neuraxones of these nuclei pass downward through the spinal cord probably chiefly through the anterolateral descending tracts and come into contact with neural cells in the anterior horns of the spinal cord.

One neuraxone by means of collaterals, may come into contact with neural cells in a number of segments of the cord.

The vasomotor cells in the cord send their neuraxones through the anterior roots of the spinal nerves. They leave the spinal nerve a short distance beyond the junction of the anterior and posterior roots and pass through the rami communicantes to one of the ganglia of the sympathetic system of nerves, and have been named by Langley the “preganglienic paths”.

In the ganglion the preganglionic paths end in contact with one or more neural cells whose neuraxones, as “postganglionic paths”, are distributed to the muscle cells of the blood vessels.

The neuraxones from the constrictor nucleus to the muscle cells of the blood vessels are in a constant state of functional activity keeping up a partial constriction of the muscle cells of the blood vessel walls and thus preserve arterial tone, which is necessary for the proper distribution of the blood.

Postganglionic paths of both constrictor and dilator neural cells are, as a rule, found together except in the case of certain of those supplying the blood vessels of the head and those supplying the blood vessels of the abdominal and pelvic viscera and the external organs of generation. The postganglionic paths of neural

cells supplying the blood vessels of the skin, the muscles of the leg, trunk and arms follow the paths of distribution of the spinal nerves, reaching the spinal nerves through the rami communicantes between the sympathetic and spinal nerves. Those which supply the blood vessels of the muscles follow the distribution of the musculomotor nerves, and those supplying the blood vessels of the skin through the paths of distribution of the sensory nerves.

Practically all of the vasoconstrictor neural cells are found between the 2nd dorsal and the 2nd or 3rd lumbar segments of the cord.

Those for the brain, face, scalp, eye, ear, mucus membrane of the nose, mouth, pharynx, tonsils, larynx and salivary glands are found in the 2nd, 3rd and 4th dorsal segments of the cord.

All vasoconstrictor neural cells for the esophagus and stomach are found in the 4th to the 9th dorsal segments.

Those for the small intestines from the 6th dorsal to the 2nd lumbar.

Those for the liver from the 6th dorsal to the 1st lumbar, but chiefly in the 10th, 11th and 12th dorsal.

The vasoconstrictor neural cells for the pancreas, spleen and suprarenals in the 8th to the 12th dorsal, although some are found in segments above the 8th though less numerous in these regions.

The vasoconstrictor cells for the large intestines are found from the 11th dorsal to the 2nd lumbar.

Those for the bladder, the external organs of generation, the uterus.

Fallopian tubes, ovaries, testicles and prostate gland are located chiefly from the 11th dorsal to the 2nd lumbar segments, but it is probable that occasionally they may be found in the 3rd and 4th lumbar segments.

Those for the external organs of generation and the skin of the anogenital region in the second and third lumbar segments.

The vasodilator neural cells, with the exception of those supplying the blood vessels of the skin and muscles of the trunk, are found chiefly in the nuclei of the cranial nerves and in the sacral segments of the cord, those for the skin and muscles of the trunk being found throughout those segments of the cord which supply these regions. The vasodilator neural cells for the blood vessels of the eye are found chiefly in the nucleus of the 3rd cranial nerve, probably

also to some extent in the nuclei of the 3rd and 6th.

Those for the face and scalp are in the nuclei of the 7th and 9th cranial nerves; those for the mucous membrane of the nose, the hard palate, the soft palate, the mucous membrane of the upper lip and upper gums in the nucleus of the 7th.

Those for the floor of the mouth, the lower lip, the mucous membrane of the cheeks, the lower gums and the tongue in the nucleus of the 9th cranial nerve.

Those for the parotid glands in the nucleus of the 9th, and for the submaxillary and sublingual glands in the nucleus of the 7th.

Both vasoconstrictor and dilator cells for the bronchial arteries (supplying nourishment to bronchi and lungs) are probably located in the 3rd to 7th dorsal segments of the cord.

The vasodilator neural cells for the stomach and small intestines, the liver, pancreas, suprarenals, spleen and probably the first half of the large intestine are found in the nucleus of the 10th.

The vasodilator neural cells for the Fallopian tubes, uterus, ovaries, testicles arc found chiefly in the 3rd, 4th and 5th sacral segments of the cord.

For the bladder, external organs of generation and the skin of the anogenital region in the 3rd and 4th sacral segments.

The neural cells, both constrictor and dilator, for the blood vessels of the spinal cord and its membranes are probably found throughout the entire length of the cord, and they send their preganglionic paths to the corresponding vertebral ganglion, from whence postganglionic paths pass to the corresponding spinal nerve to be distributed to the blood vessels of the cord and its membranes.

In addition to the importance of a knowledge of the location in the cord of vasomotor neurons it is important to know the location of the visceromotor neurons which control the involuntary muscles aside from those of the vascular walls.

The visceromotor cells for the iris and ciliary muscles are located as follows:

Those which bring about a constriction of the pupil, in the nucleus of the 3rd cranial nerve.

The dilator cells for the pupil are found chiefly between the 6th cervical and first or second dorsal.

The visceromotor mechanism for the bronchi and bronchioles are found of the constrictor type only so far as we know in the nucleus of the 10th cranial nerve, and it is probable that there may be an opposing group of cells in the spinal cord between the 3rd and 7th dorsal segments for the reason that the proper manual treatment in this region of the spinal cord is of great value in relaxing the bronchial spasm in asthmatic conditions.

The heart also has a double visceromotor mechanism which consists of an accelerating set of neurons found chiefly from the 6th cervical to the 1st or 2nd dorsal segments of the spinal cord.

The inhibitory neural cells for the heart are located in the nuclei of the 10th and 11th cranial nerves and send their paths to the heart through the 10th nerve.

The entire alimentary canal is also provided with a double mechanism consisting of those neurons which accelerate peristaltic movement and those which inhibit peristaltic movement.

The accelerating cells for the esophagus, stomach, small intestines and probably the ascending portion of the large intestines are found chiefly in the nucleus of the tenth cranial nerve, possibly also to some extent in the 11th.

Their paths are also distributed through the 10th.

The inhibitory neural cells for the parts just named are found chiefly in the spinal cord in segments which correspond to the vasoconstrictor neural cells which supply them. (It is also probable that some inhibitory paths exist in the 10th

cranial nerve, and some accelerators in the cord.)

The neural cells which bring about inhibition of the muscular coat of the fallopian tubes and uterus, with contraction of the cervix, the vagina and perineum, are located chiefly in the 2nd, 3rd and 4th lumbar segments, while those that bring about a constriction of the Fallopian tubes, the muscular coat of the uterus, accompanied by dilatation of the cervix, vagina and perineum, are found in the 2nd, 3rd and 4th sacral segments, the paths to the perineum and the vagina passing by way of the internal pudic nerve.

Neural cells which bring about inhibition of the muscular coat of the bladder, accompanied by contraction of the sphincter of the bladder, are found in the 2nd, 3rd and 4th lumbar segments; while those that bring about contraction of the muscular coat of the bladder accompanied by a relaxation of the sphincter, are found in the 2nd, 3rd and 4th sacral segments.

The mechanism of the rectum and its internal sphincter are of similar character to those of the bladder, and occupy practically corresponding segments of the cord, while the neural cells for the external sphincter are probably in the last sacral and to some extent in the coccygeal segments.

This in a general way will cover the location in the spinal cord of the mechanisms that control practically all of the important functions, but of necessity has had to be brief, and for more detailed information the reader must be referred to the text books on physiology, especially Langley's article on the sympathetic and Sherrington's article on the spinal cord, to be found in the Vol. 2 of Schafer physiology, and the works of Langley.

Note: Vasodilator cells located in the nucleus of the 7th cranial nerve send preganglionic paths to Meckel and the submaxillary ganglia.

Those in 9th send preganglionic paths to the otic ganglion (small parasympathetic ganglion located immediately below the foramen ovale in the infratemporal fossa and on the medial surface of the mandibular nerve).

The postganglionic paths of both the 7th and 9th are in the main found in the 5th cranial nerve." - Dr John P. Arnold, MD, of Philadelphia, in "The Medical News", Vol.86, 1905.

Rectal Reflexes

"**The lower end of the rectum is richly supplied with both sensory and sympathetic nerves**, the sensory greatly predominating at the verge of the anus, making this part of the body an acutely sensitive surface.

In ascending, the sensory nerves gradually give place to the sympathetic, until little sensibility is imparted through the touch 8 centimetres from the entrance, in a normal condition. **This accounts for the hidden cause of so many reflexes**, having their seat of origin from lesions situated an inch or more above the anus, where the sensibility is not always sufficiently great to attract attention.

It is claimed that obscure rectal disorders may so undermine the nervous system by Reflex Irritation, allowing the inroad of general systemic disease, that

many die yearly from such causes without anyone ever knowing the origin of the fatal malady, that:

1. Migratory Pain.
2. Headache.
3. Dyspepsia.
4. Sleeplessness.
5. Palpitations.
6. Sexual weakness.
7. Nervousness.
8. Despondency.
9. Irritability, and a
10. General Breaking Down of the System.

May all be caused by a small ulcer or other irritation of the rectum, which has passed unnoticed by either physician or patient.

"In all pathological conditions, surgical or medical, which linger persistently in spite of all efforts at removal, from the delicate derangements of the brain substance that induce insanity, and the various forms of neurasthenia, to the great variety of morbid changes repeatedly found in the coarser structures of the body, there will invariably be found more or less irritation of the rectum, or the orifices of the sexual system, or both."- Professor Pratt

Concerning Rectal Reflexes

A case was reported in the Medical Record in which all preparations were made to operate for organic stricture of the urethra, which, perchance, was found to be a reflex from a small rectal fissure, and was purely of a spasmodic character.

When the fissure was cured the spasm ceased.

As evidence that physicians should be a little more vigilant in the observation and study of rectal reflexes, the case of a very talented and influential lady of this State may be appropriately instanced.

Her general health had been greatly impaired for a long time, with unexplained and repeated outbursts of sickness.

Several prominent physicians were consulted, to whom she called attention to a little uneasiness, at times, in the rectum with an irritable bladder.

They all examined the rectum, in their way, and ridiculed the idea of local disease, but went on treating the reflex symptoms with nothing more than temporary relief. The successes of a local specialist in the treatment of haemorrhoids by the Brinkerhoff system, whose ignorance of anatomy was such that he denominated the sphincters "dispenser" muscles, induced her to pay him a visit. He found a well-defined superficial rectal ulcer and exhibited it to one of

the previously named doubting physicians.

The ulcer was quickly healed and the lady restored to health. She became so enthused over the result that she took up the study of rectal diseases for the benefit of others, as a missionary, so to speak, and it is needless to say that the physicians who failed to detect the cause of her trouble did not reap any of the emoluments of her labours.

Her motto, true to a grateful nature, was to "praise the bridge that carries you over."

Among the obscure rectal lesions which have been found to produce powerful, and, for a time, baffling reflex disturbances, may be mentioned small irritable ulcers, small submucous fistulae, and a localized denudation of the epithelium of the bowel, leaving the mucous membrane red and angry.

It is known as "pellicular colitis", or "pseudo-membranous enteritis", a condition in which mucous casts of the lower bowel are discharged with much tenesmus and abdominal pain.

Neuralgia of the Rectum

When pain, continued, periodical or irregular, attacks the rectum in the region of the sphincters or higher, and no structural change can be found as a causative agent, it is called neuralgic. Some writers object to the term neuralgia in designating an affection of the rectum, believing that pain never occurs in the rectum except as a reflex from some other organ or diseased tissue, or as the product of a local lesion, which may pass undiscovered. Whatever be the cause, the attacks of pain in some of the cases characterized as neuralgic are remarkable for their suddenness and severity, the amount of prostration temporarily produced, and their almost equally as sudden disappearance, leaving nothing tangible from which to draw a conclusion. The sphincters in cases of this kind will no doubt always be found during the paroxysm to be in a state of tonic spasm.

In a paper "The Nervous or Hysterical Rectum", read before the American Medical Association, May 1888, Professor Goodell calls attention to the class of cases just described.

In explanation of the fitness of the term "hysteria", selected by him to describe certain obscure diseased manifestations, he states:

> *"The mind is sane, the organic body is sound, the individual as a whole is above reproach, and yet these muscles will behave as if they were bereft of reason. The muscles most liable to become hysterical are perhaps the circular ones, namely, the sphincters of the outlets or inlets. While insanity, so to speak, is more localized, the sufferings from the hysterical condition are perhaps greater."*

In this class, which is the typical neuralgic class, the pain comes on gradually, and is more dull or aching in character, presenting symptoms somewhat analogous to those of coccyodynia.

In some instances the patient finds comfort in sitting on the floor.

In one case of this class which came under the author's observation, the patient, a very nervous and delicate lady, maintained that she was cursed with a rectal ulcer. In obedience to this idea her physician had examined the rectum under general anaesthesia, and found what he called an ulcer on the anterior wall.

His diagnosis was, no doubt, founded upon her belief and as an apology for the examination and treatment resorted to, which put her to bed for 6 weeks.

There were no symptoms of rectal ulcer, other than pain, and no lesion found by a digital examination or seen through a speculum.

She insisted on taking chloroform and a more thorough examination made.

This was done without revealing anything more than what had already been ascertained. In discussing the class of cases under consideration, Professor Matthews holds to the view that such cases are not properly neuralgic, although he confesses that in some instances they seem to admit of no other classification.

In defining his position he states:

> *"For my own part, I believe that these so-called cases of neuralgia, are due, first, to a lesion in the mucous membrane of the rectum, and the consequent exposure of a nerve filament, or, second, the source of trouble is not in the rectum at all, but is reflected from some other organ or tissue. If the case falls under the first division, and the erosion, abrasion, or what not, is close to the sphincter muscle, the pain is aggravated during the act of defecation; and if it is from the second condition, the pain is not aggravated during this act. Therefore I am inclined to believe that the term neuralgia as applied to these cases is a misnomer. I have never found that any anti-neuralgia medication did these patients any good at all. It has been my observation that hot water injections aggravate the trouble instead of lessening it, and in several instances I have seen marked benefit result from the use of cold water injected into the rectum. I wish to reiterate what I have said before—that, of all agents to prevent rectal trouble as a class, cold water will be found the most serviceable. This especially applies to congestions, inflammations, atony, haemorrhoids, both external and internal fistulae, etc."*

- Dr William Penn Agnew, AB, MA in "Proctology", 1922

Applying Neuropathic Treatment

The Emunctologist when applying Neuropathic Treatment must consider the correction necessary in the coordination of the Cerebrospinal System, from which all organs receive their impulse for activity through the distribution of the nerve energies from the cerebrospinal system to organs of the body.

There is also the Sympathetic nervous system that Must coordinate with the

impulses from the cerebrospinal system, in keeping a normal balance between the deeper circulation and the superficial circulation.

Hence with an unbalancing of the chemical reactions, the impulses for activities of the glandular system as well as the functional system become disturbed or clogged, as indicated in the manner of these disturbances to the superficial circulation, in the manner of eliminations.

Impulses are created along the ganglia of the cerebrospinal nervous system.

Then if these are made active in such a manner as to prevent the proper coordination between sympathetic and cerebrospinal systems, the activities in the reaction of organs of the system suffer.

Osteopathic Manipulations, Chiropractic Adjustments, and Swedish Massage Neuropathically Given

Any one of these, in their correct application (Neuropathically Given), are to be a means of corrective forces; not curative forces.

They are to be general applications for mechanical adjustments along the whole of the Cerebrospinal System.

The Cause and Cure of a Form of Backache: Lumbago Coprostatica

"Backache of loaded colon: Character and position of the pain and Cure.

Lumbago is a well known myalgic pain in the loins.

I propose the name Lumbago Coprostatica (backache due to a loaded colon) for a painful affection of the upper part of the same region, due to faecal accumulation in the colon.

The pain of lumbago coprostatica may be reflex or it may be direct in origin as a kind of pain, or it may be both of these.

It yields to the recognition and removal of its cause:

"Cessante Causa Cessat et Effectus"

Cease the cause and the effect ceases." - Sir James Sawyer in "Coprostasis; Its Causes, Prevention and Treatment", 1912.

Tic-Douloureux (Trigeminal Neuralgias)

"Charles Bell in "Practical Essays", 1842, already made the statement that constipation is the cause of various facial neuralgias.

Stromayer (quoted by Gussenbauer, Prager Medicin. Wochenschrift, 1886) held that trigeminal neuralgias were to be regarded as reflexes of morbid processes in

other parts, principally in the intestines, and more particularly of constipation.

In an address before the Medical Society of Prague, Gussenbauer stated that latterly he had found that it was not necessary to operate as frequently in cases of trigeminal neuralgia as he had formerly believed.

In 28 cases of this form of neuralgia - cases of central origin being, of course, excluded - he had operated only 4 times.

He had found that a methodical treatment, with a view to a restoration of the normal functioning of the bowels, is the best method of curing obstinate and painful neuralgic affections.

The following very interesting case reported by him is excerpted here in brief.

Lumbo-Abdominal Neuralgia

Kisch reports the case of a wealthy factory proprietor, aged 50, who had suffered for years from pains shooting from the lumbar vertebra into the scrotum, paroxysmally, every few days, sometimes several times in one day.

He had been treated in various ways without relief. He had obstinate constipation, and an examination of the rectum revealed haemorrhoids.

By attention to these 2 abnormalities he was cured completely in several weeks.

1. Overalgia (ovary pain).
2. Sciatica may be thus produced.

(see: Henoch, “Klinik der Unterleibskrankheiten”, Third Edition, 1863, p. 483)

Neuralgias

There are other neuralgias also due to constipation, but these may be produced in a merely mechanical way by the pressure of accumulated faeces upon the various nerve tracts in the abdominal cavity.

Irritating Harassing Cough

An irritating, harassing cough without any pathological substratum therefore in the bronchi or in the larynx, a reflex cough without any discoverable point of irritation either in the nose or in the throat, will sometimes be found to be intimately related to the persistent constipation present, and that with the cure of the latter the former will disappear.

Enlargement of the lingual tonsil, and therefore persistent and irritating cough.

An Otalgia (ear pain) may be set up by irritating matters in the bowels.” - Dr Henry Illoway, MD in “Constipation in adults and children”, 1897.

Scoliosis

"Lane's very vivid picture of Auto-Intoxication, the results of chronic intestinal stasis includes the following items:

1. Loss of fat contributing to prolapse of internal organs.
2. Wasting of the muscles, setting up scoliosis (lateral curvature) and flat foot.
3. Thick, inelastic, sticky skin with pigmentation."

- Dr Alexander Bryce, MD, CM, DPH, in "Intestinal Toxaemia; or, AutoIntoxication in the Causation of Disease", 1920.

Nervous Conditions

Nervous conditions should be one of the main health conditions that any well trained Emunctologist should know by heart on how to treat same.

Therefore All Nervous Conditions have 1 of 3 causes:

1. Nervous condition caused by Toxaemia, causing irritation and inflammation to the nervous system.
2. Nervous condition cause by Accident, allowing for the dislocation of the Musculoskeletal system, thus interfering with the nervous system.
3. Congenital disorders in origin.

Nervous conditions caused by either Toxaemia or Accident can be easily treated. Nervous conditions in which the cause is from conditions present at birth, this can be improved in a first instance.

> *"My mission, is to make sure that as many people as possible know that the presumed "incurability" of chronic disease is a myth, and that healing is eminently feasible." - Dr Kelly Brogan, MD in "Own Your Self, The Surprising Path beyond Depression, Anxiety, and Fatigue", 2019.*

The Emunctologist should know that there are no untreatable or incurable conditions, all conditions can be treated and all conditions can be improved.

Those conditions which have by neglect been left unattended, and are in advanced stages, or terminal stages, then these only the Lord The Christ Who is God can cure them. In this cases treatments can be given and the Advise for the individual to Pray directly to the Lord for a cure.

If the individual does not believe in the Christ the Lord He Is God, then that each individual must know in what they believe and in whom they believe in.

Blood Supply

"Dr William Wallace Fritz, physician, was reared on his father's farm until 16 years of age.

While haying in the summer he was so injured by falling from a load of hay that his life was despaired of, and while convalescing began the study of Anatomy.

In 1891 he entered the Medico-Chirurgical College in Philadelphia, and graduated MD in 1894. He organized the Medical and Pharmaceutical departments of Temple University, of which he was Dean and Professor of Anatomy and Clinical Surgery. He also inaugurated there a 5 years course of study for medical students, Temple University being the first university in this country to require a 5 years course.

Having become interested in the drugless treatment of human ills, in 1906 he was appointed professor of surgery and clinical surgery in the Philadelphia College and Infirmary of Osteopathy, and in 1908 organized the American College of Neuropathy.

Dr. Fritz, MD is one of the iconoclasts of the medical profession, having evolved a number of theories that run contrary to the generally accepted beliefs of the profession.

He denies that most diseases are caused by bacteria, claiming that the beginning of all diseases is the loss of the function of the nerve mechanism governing the blood supply to the involved area, producing hyperaemia (excess of blood in the vessels supplying an organ or other part of the body), followed by blood stasis, diminishing the resisting power in the involved area, which thus becomes susceptible to the invasion of disease germs; also that diseases can be prevented by removing the blood and lymphatic stasis from the involved area by regulating the blood supply to all parts of the body through the nerve mechanism.

He also maintained that there was no epidemic of infantile paralysis during the summer of 1916; that the majority of such alleged cases were mistaken diagnosis; that infantile paralysis is not contagious or infectious, but is caused by errors in diet in unhygienic conditions; and that 99%, of reported cases could have been cured by drugless treatment or Neuropathy." - in "The National Cyclopaedia of American Biography", Vol. 16, 1918.

Kinking or Stasis at Splenic Flexure

"Damming back of intestinal contents owing to stasis at the splenic flexure can and does give rise to symptoms of caecum mobile but there is also local pain in the left flank.

Reynier thinks that pain in the neighbourhood of the 7th and 8th ribs, almost always described as a "stitch in the side" and taken to be intercostal neuralgia, is one sign of incomplete obstruction at the flexure. Payr distinguishes between chronic stenosis and sudden obstruction (Occlusionskrisen).

In the former, besides obstipation and toms general symptom of intoxication there is severe pain near the umbilicus or at the left costal margin.

If flatus passes freely the symptoms disappear or diminish for a time.

Abdominal distention causes a feeling of anxiety and pressure in the head; there is general weakness.

Blood and mucus may be in the stools.

> *"The condition can drag along for weeks or months and constitutes a fight between nutrition and evacuation. A few hours after meals, often dining the night, severe colicky pains appear in the whole abdomen, and intestinal spasticity (darmsteifung) can be observed in the right bypochondrium (Weiss). The ileocecal and umbilical regions are specially tender." - Burckhardt: Ergebnisse der Chirurgie, iv, 382."*

- Dr J. F. Binnie, MD in "JAMA", 29 June 1912.

Appendix Reflex

"Lebon and Aubourg, presented before the Radiological Society of Paris, France, comparative radiographs showing modifications of the large intestine after stimulation of different vertebral spines by my methods (N.C. 65 and S. 32).

It is also known that Jarvis (N.C. 58) was able to observe the reflexes directly in laparotomized patients.

No one having reported concerning an appendix reflex, I requested Dr. H.E. Mac Donald (Los Angeles) to execute investigations respecting this question.

His results were not definite enough to formulate conclusions.

I then investigated the subject with Dr. Caro W. Lippman (a former assistant of Holzknecht) and a radiologist of repute as a gastroenterologist and others.

In subjects having previously ingested bismuth or after enemas of barium sulphate, the appendix could be directly observed with the fluoroscope.

It was noted that, concussion of the 10th dorsal spine emptied the appendix of its contents and concussion of the 1st lumbar spine caused it to refill.

I have already successfully utilized this reflex in several cises of chronic appendicitis with good results.

Thus the splanchno-diagnostic reaction (vide Physico-Clinical Medicine, No. 1,

p.8) of streptococcic infection and colisepsis evanesced after several seances of concussion of the 10th dorsal spine with corresponding amelioration of the symptoms." - in "Physico-Clinical Medicine", Vol.1, No.2, December 1916.

Mechano-Therapeutics in the Treatment of Chronic Constipation

"The movement cure in its modern phase dates back to the commencement of the last century, when it was invented by the Swede, P. H. Ling (1776-1839.)

After his death his pupils developed the work which he had begun, the chief ones being L. G. Branting, Hj. Ling, and H. Kellgren.

On considering the pathology of constipation from the mechano-therapeutic point of view, the following feature is apparent:

Diminution in the Function of the Abdominal Sympathetic

The integrity of the sympathetic mechanism is dependent upon a normal amount of sensory conductivity in the sympathetic and a normal amount of discharge of motor impulse to the viscera.

Diminution if sufficient in amount in either of these will, in the course of time, lead to defective innervation.

To test the functionability of the abdominal sympathetic, ordinary deep palpation is useful, noting the amount of tenderness.

Instead of this, however, a friction with the finger tips across the portion of the abdominal sympathetic that is being palpated is an equally good if not a better guide.

Frictions across the ganglion impar; that is across the anterior surface of the coccyx-can also be used to test its condition.

The friction will normally call forth certain definite sensations which may be rather acute. In abnormal cases, however, these may vary in amount from great hyperaesthesia to practically complete anaesthesia.

With chronic constipation the tendency is nearly always towards diminished sensation, though this is more marked in the lower part of the abdominal sympathetic, and not so much in the case of the solar plexus and semilunar ganglion; in cases of rectal atony the ganglion impar is commonly found to have very little sensation, sometimes, indeed, none.

The amount of sensation elicited by the above method is an excellent index to the state of functionability of the abdominal sympathetic.

Passive Manipulations of the Abdominal Viscera

Those most commonly employed:

1. Deep petrissage of the abdomen is given so that the, abdominal contents receive a thorough kneading, the direction of the manipulation being, generally speaking, in the line of the large intestine, commencing at the ascending colon and ending at the sigmoid flexure.
2. Special Manipulations for the Liver: The lower border of the liver maybe submitted to petrissage or strong vibrations, either stationary or running along the costal margin. Frictions in a zigzag direction can also be applied here, and even tapotement of the liver. The amount of sensation induced is a good guide to the duration and intensity of the manipulation.

The effect on the abdominal contents of the above manipulations on the intestine is due to 2 main factors:

1. Alternate Compression and Relaxation.
2. Mechanical Stimulation, chiefly direct, but partly reflex.

The individual phenomena are as follows:

a. Promotion of the venous flow in the portal system and the inferior vena cava (that is, unloading of the abdominal veins) and vaso-dilatation of the splanchnic area (that is, improved' arterial supply).
b. Stimulation of the intestinal peristalsis. In eases of largely dilated colon this is often quite visible to the naked eye; and quite recently it has been studied by some observers by means of the administration of bismuth and then the use of the x rays.
c. Onward progression of scybalous masses-that is, unloading of the contents of the atonic intestine. This is frequently apparent during the actual application of the abdominal petrissage.
d. Improvement in the secretion of the pancreas, intestine,
and liver.
e. Increased absorption by the lacteals.
f. Stimulation of the stomach proper, which tends to react favourably on the intestinal peristalsis.
g. Stimulation to a certain extent of the abdominal sympathetic (see under next section).
h. Stimulation of the abdominal parietes (see under active exercises).
i. Various reflex effects on the heart, cerebro-spinal system, etc., which it is unnecessary to consider here.

Passive Stimulation of the Abdominal Sympathetic

There are 3 ways of effecting this by means of "nerve frictions":

Reflexly
a. Through the external branches of the posterior divisions of the spinal nerves.
b. Through the anterior divisions of these nerves.

Directly
c. Through the abdominal wall.

A friction on a cerebro-spinal nerve is administered by drawing the fingers across it as nearly as possible at right angles to its long axis.

Frictions on the external branches of the posterior divisions of the spinal nerves, or along the course or across the anterior cutaneous branches of the lower 6 intercostal nerves, can be employed in order to stimulate the muscle of the abdominal wall directly and the abdominal viscera reflexly.

Friction on the abdominal sympathetic direct can be applied in the manner described on any portion of the sympathetic that may be needed; with topographical anatomy as a guide, it is possible to reach the solar plexus, semilunar ganglia, and inferior hypogastric plexus.

Further details on the manual treatment of the abdominal sympathetic can be found in the "New York Medical Journal", 1910, pp. 171-175, and in the "Arch. gen. de ther. phys.", Nov. 1910.

Glossary

Tapotement: Is a specific technique used in Swedish massage. It is a rhythmic percussion, most frequently administered with the edge of the hand, a cupped hand or the tips of the fingers.

There are 5 types of tapotement;
1. Beating, 2. Slapping, 3. Hacking, 3. Tapping, 5. Cupping.

Petrissage: Are massage movements with applied pressure which are deep and compress the underlying muscles. Kneading, wringing, skin rolling and pick-up-and-squeeze are the petrissage movements." - Dr Edgar F. Cyriax, MD, in "British Medical Journal", 18 March 1911.

In Neuropaty the Emunctologist should known that an injury to the coccyx can produce (directly and indirectly) more different types of conditions than any other part of the body except for the cerebral brain itself.

Observations on the Gastro-Intestinal Nervous System

"The entire gastro-intestinal tract is innervated by the autonomic nervous system through its sympathetic and parasympathetic divisions (Langley Nomenclature).

Activating influences are received through the bulbar and sacral divisions of the parasympathetic, and inhibitory influences are received through the thoracic sympathetic.

An equilibrium of action is established when these 2 opposing influences equal each other.

The parasympathetic is composed of 2 divisions, an upper and a lower.

The vagus or upper division, with its nucleus of origin in the medulla, and the pelvic (nervous erigentes), or lower division, with its origin in the sacral segments of the spinal cord. Both of these systems have their motor cells in outlying ganglia intimately associated with plexuses of Auerbach and Meissner.

In fact, it is these plexuses which constitute the intrinsic motor supply of the gastro-intestinal tract.

This structure is probably somewhat similar to the nodal tissue of the heart and is capable of carrying on the motor and secretory functions of the stomach and bowels, even after the extrinsic supply composed of the vagus and pelvic nerves, have been severed.

The inhibitory nerves of the gastro-intestinal tract are supplied by the splanchnic sympathetic and when these nerves are stimulated the musculature of the intestine is relaxed, the activity of certain secretory glands is depressed, and the blood vessels may be either constricted or dilated, according to the degree and character of the stimulation.

The colon as well as other portions of the alimentary canal receives its nerve supply from both the sympathetic and parasympathetic.

Investigators differ in opinion as to the source of the parasympathetic supply of the colon.

According to some authorities, fibres from the vagus supply the ascending and transverse colon, the remaining part receiving its innervation through the pelvic nerves.

Other investigators such as Langley, Gaskell and Anderson maintain that the colon receives its entire parasympathetic or motor supply through the pelvic nerves, the motor cells for these nerves being situated between the muscular walls of the colon.

The sympathetic or inhibitory fibres of the colon are derived from the lower thoracic and upper lumbar segments in the spinal cord.

Their outlying ganglia cells are situated in the splanchnic chain.

Stimulation of these fibres relaxes the musculature of the colon, decreases the glandular activity, and may produce either a vasoconstriction or vasodilatation.

In a discussion of alimentary toxemia before the Royal Society of Medicine of Great Britain a few years ago where some 60 leading physicians of London were present, Dr. J. F. Buscow, the director of a large hospital for the insane, asked this question:

> ***"Who has not seen a prodigious evacuation of the bowels in the hands of a physician, terminate a case of insanity?"***

He further added that in his opinion it was obvious that constipation encouraged and accentuated such mental symptoms as apathy, irritability, preverted moral feeling, melancholia mania, and even suicidal inclinations, while on the physical side it tends to produce a long string of diseases.

We would like to emphasize the possible correlation between the nervous innervation of the bowel and colonic stasis.

Pottenger (Symptoms of Visceral Disease, 1925) considers the sympathetic as the protective and energy expending system of the body and the parasympathetic as the energy conserving system, whose function is the maintenance of the organism as an individual.

Of the 2 divisions the sympathetic is the most widely distributed and consequently its action is more general.

These 2 systems are very intimately associated with the activity of the endocrine glands and an hyper-irritability of either of the systems tends to produce an increase of the secretion of the glands which are innervated by that particular system.

For example, the parasympathetic when stimulated, results in an increase in the secretion of the glands of the stomach, bringing about a gastric hyperchlorhydria, while on the other hand, a stimulation of the sympathetic acting upon the suprarenal glands produces an increase in the secretion of adrenaline which, in turn, intensifies and prolongs the action which results from sympathetic stimulation.

In comparing the effects produced by sympathetic and parasympathetic stimulation, we find that stimulation of the sympathetic contracts the pilomotor muscles, producing the so-called "goose flesh", and contracts the musculature of the sweat glands.

The blood vessels may be either dilated or contracted dependent upon the character and strength of the stimulus.

The rate of the heart beat is increased, the pupils are dilated, secretion of the lachrymal and salivary glands decreased, the secretion of mucous membrane of the nose and throat is diminished, resulting in a dry throat and coated tongue.

The musculature of the respiratory tract is relaxed and secretion diminished.

The musculature of the entire gastro-intestinal tract is relaxed with a decrease in secretion and impairment of peristaltic activity.

The sphincter muscles of the entire gastro-intestinal tract, the ureters, uterus and bladder are constricted.

Parasympathetic stimulation on the other hand, produces just the opposite effects or no effects at all, dependent upon the organs which it innervates.

From this it would seem that the activity and integrity of the autonomic nervous system may have a very important application in at least certain types of individuals who show evidence of functional intestinal stasis.

Let us for Instance take a specific case, that of a young man, 21 years of age, admitted to the Toledo State Hospital some few months ago, presenting rather typical manifestation of dementia praecox.

A-ray examination showed that more than 10 days were required for the elimination of a barium meal.

The following are some of the symptoms presented by the patient:

Dilated pupils, definite pallor of the skin, cold clammy extremities with excessive perspiration, heart rate 110, systolic blood pressure 145, mouth and throat dry, tongue coated, breath foul and offensive, appetite very poor. Mentally the patient was inactive, apathetic, negativistic and at times stuporous.

A history given by the relatives stated that he had suffered from chronic constipation for years.

Following simple Colonic Irrigation, sinusoidal galvanic current treatment, Ultra Violet Radiation and tonic Hydrotherapy, he has in the course of a few weeks shown a decided improvement, so much so that the prognosis now appears to be quite favourable.

The symptoms in this, case rather definitely indicate the lack of autonomic equilibrium and the question may well be asked, what relation may this lack of autonomic equilibrium have to the patient's intestinal stasis or mental disease.

Although this is a rather pronounced case, it is by no means an isolated one.

In the series of patients examined, quite a high percentage have shown evidence of some autonomic disorder.

In this connection it may be mentioned that in the manic depressive type very few of the excited and maniacal subjects showed any evidence of stasis, while on the other hand, a very high percentage of the depressed manics presented evidence of stasis of a pronounced character." - Dr N. W. Kaiser, MD in "The Ohio State Medical Journal", June 1930.

Neural Visceral Reactions

"We should bear in mind that in the neuropathies as a group there is a generally lessened cerebral domination or inhibition, a relative degree of psychic adynamia, as a consequence, the lower centers, the lower neural mechanisms, react unduly, and, as a consequence, "neural visceral reactions" become unduly prominent.

Normal responses are grossly exaggerated, or anomalies, irregularities or vagaries are presented.

The detailed explanation of the symptoms is to be sought for in the intimate

relations existing between the cerebrospinal, the Autonomic and the Sympathetic Nervous Systems.

Suffice to recall the duplex innervation of the heart:

1. The autonomic innervation through the vagus
2. The sympathetic innervation through the accelerator nerves

The first representing a higher mechanism of domination and control; the second, a lower mechanism which manifests increased or unrestrained activity when the higher mechanism is weakened.

In the case of the gastro-intestinal tract, we have, again, on the one hand, the vagus, and on the other, the splanchnic nerves, and between these a similar interaction takes place. When we reflect that duplex innervations exist for the glands of the mucous membranes of the trachea and bronchi, for the muscles of the trachea and bronchi, for the glands and muscles of the intestinal tract from the esophagus to the anus, for the urinary bladder, for the genital organs and for other viscera, and for the blood vessels of all these structures as well, we can readily understand that in the derangements of action which result from over-fatigue or which result from the lessened cerebral domination present in the neuroses as a whole, very many symptoms make their appearance; symptoms which, as I have endeavoured to show, may be grossly misleading, if not properly interpreted.

The first step, I should say in conclusion, is always the prompt recognition of the underlying neurosis or of the underlying organic nervous disease as the case may be." - Dr Francis Dercum, MD, in "Visceral Symptomatology in Nervous Diseases, Grave Dangers of Misinterpretation and of Unnecessary Surgical Intervention", JAMA, 13 July 1918.

Chronic Backache
Its Cause and Treatment

"Backache, a very common ailment, has a puzzling etiology and an equally puzzling treatment.

It may be considered under 3 divisions:

1. Pain in the knee may come from an inflammatory reaction in the hip, being referred along the line of the nerve. A nerve impulse travels along the afferent nerve route towards the spinal and cerebral centers; from the spinal center it is again referred back to the periphery along the efferent route as a reflex manifestation. Thus the liver, stomach, duodenum, pancreas, kidneys, and pelvis may be indirectly affected. The way to cure a referred pain in the back is by clearing up the primary condition, and the backache will disappear.

2. Some cases of backache may be due to essential diseases of the spine and vertebrae, such as tuberculosis, tumors (including sarcoma and carcinoma), chronic hypertrophic arthritis, and the acute infectious processes. Here no accurate diagnosis can be made without stripping the patient; and, again, the treatment consists in treating the underlying cause.

3. Backache may come from poor posture or from a focal infection at a far point. Colonic Irrigation will alleviate pain in the back caused by Autointoxication." - Dr A. Bruce Gill, MD, Professor of Orthopedic Surgery, University of Pennsylvania School of Medicine, in "Pennsylvanian Medical Journal", 1933.

> *"In one of our cases (a woman) constant backache was present, and the polypus, which produced tenesmus, but did not bleed, was discovered. Its removal freed the patient from backache." - Dr A. Everett Austin, MD in "Diseases of the Digestive tract and Their Treatment", 1916.*

It is in the patient study of Anatomy & Physiology, that the Secrets of Neuropathy, can slowly be revealed.

This is a truth, for nothing is placed in the body structure without a reason, or function. Nothing in the body is there by chance, or surplurious not needed by the body, each and everything in the body has its purpose and function.

It is here, that the Special Anatomical & Neuropathic Charts (issued by the Hospitallers Order of the Good News), have been created in order to aid in the comprehension of the complex relationship and interdependency; of the body organs, with the central nervous system, the vertebra of the spine, and the glands of the body.

Vegetative Nervous System

"The vegetative nervous system is the correlating system upon which the body relies for quick action whenever the organism is threatened, and upon which it depends for the proper distribution of those stimuli which are necessary for its normal physiologic function.

The importance of this system depends upon the fact that it controls the action of all smooth muscle, the striated heart muscle, and all secreting glands of the body.

The vegetative centres in the brain and cord, help to clarify some of the more complicated effects which result from a specific stimulation or a stimulation applied to some definite site in the brain or cord.

And the endocrines in their relationship to bodily function.

As physiology becomes better understood, the vegetative nervous system will occupy an ever more important position in its relationship to body function.

This book attempts to bring an important phase of physiology to the physician.

It is pre-eminently a discussion of man as a segmented organism.

On the one hand, it describes visceral and somatic relationships to neurons which take origin in the various segments of the cord; and, on the other hand, it describes the reflexes which result from this association.

Reflex spasms, pains (referred pain), and degenerations are described and assigned to the various neurons which mediate impulses from inflamed or irritated viscera.

Physiologic reflexes do not shift, so if the clinician knows his segmental relationships, he can reason from organ to the zone of the reflex or from the zone of the reflex back to the organ.

While the importance of reflexes is emphasized throughout the book, an attempt has been made to show that man is a unit, acted upon by many forces, some physical, some psychical, some physiologic, some pathologic, which determine and alter nerve reaction, thus making for variability of symptoms.

It is an attempt to show how pathologic changes in one organ affect other organs and the organism as a whole, through the medium of the visceral nerves.

The functions of the sympathetic nervous system are divided, as is well known, into sensory, motor, secretory, and trophic.

The sensory sympathetic fibres transmit impressions to the spinal cord and brain; the motor, supply the involuntary or unstriped musculature. Aside from this, there are mixed fibres which establish a connection between neighbouring sympathetic ganglia. The tonus of unstriped muscle fibres is reflexly maintained through sympathetic ganglia.

The sympathetic system is also, without doubt, operative in originating many reflexes in the sphere of the internal organs.

There is lacking today scarcely a single proof of the fact that cellular interruption of nerve fibres takes place in the sympathetic ganglia. With this fact established these ganglia assume at once the role of true nerve centres.

Ganglia are centres in which impulses coming from the central nervous system are relayed for the purpose of distributing their action widely.

It has been shown that the number of fibres leaving a ganglion is always greater than the number of those which enter it.

Therefore, ganglia may be looked upon as distributing centres for impulses.

Probably no one has given us so valuable a conception of the vegetative nervous system in all its physiologic relationships as Cannon ("The Linacre Lecture on the Autonomic Nervous System", The Lancet, 24 May 1930).

His work is particularly valuable in that it shows its correlating function. lie has pointed out how the two components, the sympathetic and parasympathetic, differ in the service that they render the organism.

He has particularly emphasized that if the effects of harmful forces which are directed against the organism are to be overcome, they must be overcome through the nerves which supply visceral structures.

Headaches

The headache which accompanies intestinal disturbances is often of a reflex nature. The impulse arising in the gastrointestinal tract passes centralward over the sensory fibers of the vagus or pelvic nerve and is transferred to the trigeminus producing pain in different areas of its distribution.

Herpes

Herpes labialis is sometimes found in infection of the intestinal tract, the afferent impulse coursing over the vagus, and stimulating centrally the 5th cranial nerve. While it is most common in colds and pneumonia, I have seen it in intestinal infections as well. This seems to be one of the axon reflexes.

Herpes is a common pulmonary parasympathetic reflex expressed through the trigeminus nerve. It is particularly common in pneumonia, but it is sometimes found in other affect ions of the lung. It also occurs in common colds and some gastrointestinal conditions." - Dr Francis Marion Pottenger, AM, MD, FACP, in "Symptoms of Visceral Disease: A Study of the Vegetative Nervous System", 1944.

The Importance of Stimuli in Pathology and Treatment in the Light of the Doctrine of the Neuron

"This book (Die Bedeutung Der Reize Für Pathologie Und Therapie Im Lichte Der Neuronlehre) is an application of the more recent discoveries in the constitution of the nervous system to pathology and therapeutics.

Beginning with the fact that the nervous system is composed of isolated units or neurons, each consisting of a nerve cell, a long axis cylinder process, and several short processes all terminating in minute end bulbs, and with the inference that the nerve energy passes from one neuron to any adjacent one through an intermediate conducting substance, the author supposes this energy to be in the form of a wave, subject to fluctuations below and above the normal.

There is an equilibrium of nerve excitability the resultant of impulses coming, on the one hand, from the skin, and on the other from the higher centres, and that pathological alterations in this produce reinforcement or inhibition of motion, sensation, reflex action, or secretion, which alterations may be due to toxic, nutritional, inflammatory, degenerative, or traumatic causes.

In therapeutics one seeks to affect the abnormal neuron wave through afferent impulses generated by heat and cold, by passive movements, massage, electricity, gymnastics, baths, blisters, or cautery, so as to affect, for example, the motor neuron in paralysis or spasm, and the sensory in anaesthesia or hyperaesthesia,

either by way of reinforcement or of inhibition; the effect in each case being increased if the patient's attention be concentrated on the movement or sensation whereby the neuron wave is influenced simultaneously from the periphery and centre.

The book is, in fact, neither more nor less than a skilful adaptation of the newer physiology to the old idea of "sympathy" as expounded by John Hunter, together with some suggestions for applying it in the treatment of disease." - Dr A. Goldscheider, MD in "British Medical Journal", 15 October 1898.

Remarks on Physicodynamic Agencies in Diagnosis and Treatment

"Visualization by means of the X-Ray enables us to know of a certainty much that heretofore must have remained inferential or unknowable. Thus we are in a position to systematize findings chiefly of a physicodynamic nature.

In this connection let me allude briefly to a line of treatment which has long seemed to me of promising possibilities, but inasmuch as the surgical note was so dominant and so positively keyed to the tune of cutting, I have held my peace.

Now, thanks to a surgeon of Geneva, Dr. Bourcart, who has performed some gratifying cures on a number of acquaintances suffering from the effects of intestinal stasis, adhesions, kinks, angulations, enteroptosia (abnormal descent of the intestines in the abdominal cavity) and the like hindrances to function by manipulative procedures alone, I am encouraged to state that I, too, have obtained similar results and hope soon to report them.

My friend, Dr. John B. Deaver, tells me he is familiar with Dr. Bourcart's work and thinks highly of it, cordially admitting, also, that better results often can and should be secured by judicious hand work than by cutting.

Adhesive bands of certain kinds known, and of other kinds to be determined, tend to spontaneous subsidence and disappearance, as he has frequently observed, during secondary operations.

Fortified by an X-ray study of organic interrelationships, morbid conditions, and proceeding cautiously, guided by sensory and other responses, I have already been able to secure gratifying results in conditions adjudged inoperable, and in others when operation has been declined whereas disabilities and distresses have been hitherto almost disabling.

In the past few years our knowledge of visceral neurology has made notable advances through the study of the so-called autonomic nervous system.

This again is subject to divergent effects due to the preponderence of the vagus or of the sympathetic nervous system.

Hence we are able to differentiate more precisely between varying states in function and derangement of function, to obtain clearer views on diagnosis and indications for treatment. This also is closely correlated with that fundamental group of auto-regulative mechanisms, the ductless glands, the hyper- or hypo-function of which offers solutions to hitherto inexplicable problems.

The autonomic nervous system, better termed the vegetative nervous system, is that system of efferent fibers arisirtg from the sympathetic and related ganglia which supplies the organs of involuntary processes of the body and possesses a certain independence of the central nervous system.

Its anatomy is too well known to be given here in detail. Briefly, it includes some of the cranial and sacral nerves and the sympathetic system proper.

The latter is composed of a chain of ganglia lying on each side of the vertebral column.

One ganglion, as a rule, is present to each spinal nerve-root Langley has shown that each fiber of the sympathetic nervous system can be regarded as being made up of 2 sections:

1. A Preganglionic fiber; which is medullated, arises in the central nervous system and passes down to a ganglion.

2. A Postganglionic fiber; usually non-medullated, which arises from the gangtion and continues to its peripheral distribution.

The fibers of the vegetative nervous system are not wholly equivalent in their functions.

The heart beat, for example, is quickened by stimulation of the accelerators (sympathetic) and slowed by stimulation of the vagi (autonomic).

The functions of the vagus for the greater part of the gastro-intestinal canal are motor, while those of the splanchnics (sympathetic) are inhibitory. (J. M. Wolfsohn, JAMA, 16 May 1914).

Thus it will be seen that an antagonism exists between the two sets of visceral fibers.

The viscera also are for the most part innervated by both the cranio-sacral (autonomic) and also by the sympathetic nervous systems, with functions reciprocal to each other.

The functions of any one set of fibers for any one viscus are not yet sharply, but fairly well outlined.

Stimuli capable of producing uniform, predicable effects through the visceral nervous system are of many kinds, among which are electrical, mechanical, chemical as well as emotional.

A study of available evidence will demonstrate that mechanical stimulation, similar to electrical, is capable of affording important practical results and can be made of constant use upon an adequate amount of study and clinical experience.

It is an enlarging field gaining steadily in confidence wherever it receives the same critical attention vouchsafed to other forms of awakening the normal responses. Particularly do the autonomic, vagal or vegetative nervous mechanisms and their distributions, in connection with allied structures, afford significant grounds for determining the nature, forms, degrees and relievability of many abnormal phenomena.

While as yet we are on the outer edge only of this complex subject, it is already entirely practicable even now to achieve excellent results and yet more by persistently feeling one's way along the lines indicated.

A vast amount of reliable knowledge obtainable-in no other manner comes through instinctive awareness, sensitive tactile percepts, revealing variations in tissue tones.

Subjective sensory reactions (sympathetic) are commonly present, especially in the paravertebral tissues, indicating the areas irritated.

These areas of tenderness are of great importance in diagnosis, and disappear after local treatment.

> *"Perhaps the most constant result of vagotony is the hypertonus in the musculature of the stomach and bowels. The bowels, chiefly the colon, remain in a more or less constant phase of over contraction - spastic constipation so frequently found in early and middle life." - Dr B. L. Spitzig, MD, in "JAMA", 31 January 1914.*

Much can be learned by practice in palpation, and many morbid conditions yield to manipulative procedures.

This can be greatly amplified by elicitation of the spinal reflexes so ably explained by Albert Abrams.

Long ago, I learned from Dr John P. Arnold, MD to appreciate the significance and therapeutic resources of the sympathetics, producing vaso-constriction, hence expedition of the ebb and flow of body fluids by manual stimulation through the vaso-motors.

The rules are so simple and their application so efficient it is a puzzle to me that clinicians have not learned to employ them more generally.

In brief, these are: **Gentle steady pressures on the paravertebral tissues induce reflexly vaso-dilation, affecting the viscero-motors, and the arteries of the head, limbs and trunk, expediting drainage in these areas.**

Conversely, alternating pressures induce vaso-constriction, which is the more effective clinically.

For practical purposes, this suffices to expedite not only blood flow but lymph propulsion.

Sensory relief is also afforded.

To be sure this group of effects is of limited scope and utility, but when in cooperation with concussion on specified and clearly marked vertebral areas, according to Abrams, reflexes of contraction or dilatation in the visceral masses can be elicited whereby forceful effects can be induced going far toward controlling functional action and over-action.

A sense organ is not stimulated unless there is a change of rate in the transference of energy as Sherrington says.

If a weak agent is to be stimulated, it must be abrupt.

Herein lies the key to most of the wonder workings of the extra-mural cults of back twisters, bone adjusters, and the like.

They enunciate special rules of their own, elaborate and mystifying, but when all is told effects they achieve are reducible to these simple factors.

Tissue tone, elasticity, states of density spasm relaxation, rigidity and their variants form a fertile ground of simple yet efficacious control over a large group of distresses, "neurites", "algias", "rheumatic states", "fibromyosites", and the like.

As illustration, take the much discussed conditions attributed to vascular hyper- or hypo-tension. At the last issue much of these can be reduced to a question of local nutrition, in the myocardium, the large vascular trunks as well as the lesser vessels: correlatively of the kidney, of the ductless glands, the "noble organs" and the like. Vascular nutrition depends largely on the tonus of the vaso-vasorum. Given a normal action and reaction of these supply vessels and the equipoise of the vascular system can be assumed to be maintained.

The question of elasticity of skeletal structures, movements in muscular masses, here becomes an important factor.

Densities, rigidities in gross structures, impede hydrostatic competence and must be modified or overcome; so of mobility, pliancy upon which hydrostatic efficiency depends, only to be conserved by adequate kinds and degrees of passive and active motion, kinesitherapy (movement therapy).

Blood and lymph pumps must be set going and kept in motion by neuromuscular and gross respiratory acts.

Use of parts as they were designed to functionate is of equal importance for symmetrical functionation with any possible substitute.

This use is called exercise and is held in disfavour by sedentary persons who can adduce some horrifying examples of over-athleticism but are absolutely incapable of disproving fundamental biologic principles.

Elasticity in structures which normally exhibit this quality is absolutely essential to harmonious integration.

Mere locomotion may be sacrificed, mobility of arms and hands may seem unessential to some persons, but structures concerned in vegetative, circulatory, glandular, nervous and intellectual processes cannot be so philosophically neglected.

Let me briefly cite the desirability of maintaining or regaining flexibility and elasticity of the structures of the special senses.

The entire blood, lymph and nerve supply to the head passes through the tissues of the neck.

These frequently become dense, rigid and interfere mechanically with ebb and flow of vital fluids. It has been my privilege repeatedly to restore relative functional competence to organs of special sense, to eye, ear, nose and throat by mobilizing tissues of the neck, often in those in whom the best efforts of specialists had proved of no effect. This statement can be readily verified by any one who will take the trouble to do likewise.

Vegetative functions, notably of the thorax, so commonly contracted; also of the abdominal organs, usually water-logged as middle age and sedentary life

advances; and of interest likewise to the male, advancing prostatism, are all capable of gratifying improvements by the simple process of regaining structural elasticity.

Not only so, but by eliciting reflexes of contraction by concussion of certain vertebral areas (after the manner of Abrams), I have seen many instances of astonishing, almost unbelievable, betterment in myocardial and aortic structures as well as in functions of the vegetative organs.

The Human Hand

Turning for a moment to Manutherapy (hand therapy), it is only possible to allude to personal convictions based on 30 years of observation.

The human hand is admittedly the most perfect instrument possible to possess, always available and only requiring judgment in control and direction.

The hand is the one instrument which most medical students are not taught to use or value in many of the fields of helpfulness where it can alone produce the best effects.

In the absence of primary teaching it is difficult to impress the consciousness of practitioners with the enormous range of manual capabilities.

By wisely directed pressures on or near nerves in continuity or subcenters, a multitude of painful states can be readily controlled or even cured; also where diverse other disorders non-sensory or only subconsciously are manifested.

For example, take the vast group of miseries known as "rheumatics" which are really forms of fibromyositis. These are now found to embrace pretty much the whole domain of "algias" and a great part of so-called neuritis.

A large proportion of diversely classified disorders, referred by colleagues or sufferers wandering to me in the weary round of searching for relief, prove, on careful analysis, to be due to fibromyositis.

Often-times it is non-sensory, or rather the sensory states are unclear; have not risen above the threshold of consciousness as frank pains.

Treatment is simplicity itself.

Reach down with the finger tips to, or around, the disturbed area, which is sometimes far removed in inches but correlated in structure, a dense, tender, boggy mass will be felt and easily dissipated by palpation.

Let me urge upon any one who desires to amplify both diagnostic and therapeutic efficiency to give attention to this one much neglected instrument, the hand, and focus energy on the diagnostic element and even here the effort will fully repay.

Much experience in clinical teaching, of late years (largely limited and particularized), forces on me an unceasing amazement at the extraordinary neglect of expert palpation.

Surgeons are, many of them, wonders in manual diagnosis.

Even though they often can and do perform exploits of certain kinds, there is much they do not search for and for which the internist must explore or omit to do

his duty. Among experts in internal medicine, their incapacity, or maybe their unwillingness, to determine and interpret some very significant indications, puzzles me.

The psychomotor realm is one in which physicodynamic principles especially obtain.

Fear, anxiety, dethronement of judgment, due to vitiation of feeling tones, leads to endless psychoses, psychasthenias, exhaustion states, insomnia, metabolic disorders, premature breakdown or senility.

There is not the slightest need to adopt any chimerical concept of the sex impulse as a point of origin or of departure for most confusion states.

The popular word "hysteria" must do duty to embrace a diverse group of disorders of disequilibrium in the psychomotor sphere.

By keeping in the foreground of consciousness this principle of psychomotor perturbation, many disorders will fall into simple clinical groupings.

Of course one should be ever alert to discover more serious, not deeper seated but graver pathologic causes.

Certain it is many bizarre and strangely suspicious "nervous diseases" come my way which yield readily to careful regulation of mind and body, through revising the conduct of life.

> *"It is not the wind which God tempers to the shorn lamb, but the skin of the lamb to the wind. The changing play of wind, of light, of cold and of warmth it is which stimulates action and reaction of mind and body alike." - Leonard Hill*

Monotony, sedentary occupation, shut in conditions, benumbing effects of wearisome domestic routine, a changless atmosphere physical and mental, induces psychomotor revolt.

Feeding on one's own fancies, unrelieved by absorbing interests, minor somatic disorders acting as stimuli to morbid self consciousness, the play of suppressed emotivity, of vitiated ideation, encourage fears, and there results an endless chain of wretchedness which constitutes the major part of all clinical clienteles. Medication is futile.

Here is the ground for skilled guidance in physicodynamic doings; education of the body as well as of the mind. Many diseases called "nervous" do not primarily arise in the nervous system itself. Nutrition of nervous elements is impaired in consequence of derangement in some other tissue or organ. For example, Hemiplegia (paralysis in some areas of the body) is the result not of any primary defect in nerve or brain structure but of interference with the nutrition of a part of the nervous system due to interruption of its vascular supply.

The causes are chiefly, if not wholly, preventable.

Precaution should be early outlined and enforced by education, by formation of habits of right living, constructive personal hygiene.

Living organisms express their activity in response to changes in the conditions of their surroundings.

As of individuals in the mass, so of structures and cells, through irritability, conductivity, rhythmicity, tone, etc.

Tubular mechanisms contract and with regularity relax; so do spherical organs. The nervous system is that part of the organism which responds most readily to external changes, to heat, cold, to impacts, also to sensory stimuli, pressure, or blow, especially in or near a center or subsidiary

center. Hence we may exert effects deliberately on bodily or mental processes affecting changes in functional actions in degree and kind, both in health and particularly where the organism is disturbed or diseased. This brings me to a most potent department of physicodynamics, too much neglected in medical schools, viz., "Constructive and Reconstructive Personal Hygiene."

By constructive personal hygiene is intended the training of a normal individual so that he or she shall attain a higher plane of vigour than would otherwise be possible, by rendering available latent powers.

By reconstructive personal hygiene we may include all that can be done not only to elaborate and amplify inherent powers but so direct them as to overcome, as far as possible, acquired defects, residua of former derangements, depressive and diseased states.

Let me emphasize my conviction founded on a lifetime of experience that in this domain of economic endeavor so vast are the practicable achievements that the half may not as yet be conceived.

Ample ground exists for confidence in the reconstructive, regenerative, potentialities of the human body already shadowed forth in reputable clinical findings. More will follow by industry in scientific and clinical research.

It is my firm belief that another generation or two will come to appreciate the truth of this statement. It is in the air, - a world thought.

Manifold forces are at work; warrantable hopefulnesses have been expressed; the foundation for this confidence is well and permanently builded.

The search for the elixir of life, the specific cure, will be near the finding when the medical profession comes to realize that within an originally sound organism there resides adequate potentialities, growth and repair forces, survival values, factors of safety, provided search is made how to conserve them, when to interfere, when to merely encourage, also when and how to apply the required transformers of energy." - Dr J. Madison Taylor, AB, MD, Philadelphia, Pa., Associate Professor of Non-Pharmaceutic Therapeutics, Medical Department of Temple University, in "Virginia Medical Semi-Monthly", 23 July 1916.

Chapter 36

Mucous Membranes

"Of all tissues of the body, there are probably none which are so liable to suffer secondarily from the effects of constitutional disorder, as the skin and the mucous membranes. They constitute important Emunctories for the discharge of various effete and deleterious matters from the blood, whether the effect of mal-assimilation, or the disintegration of the tissues; and their secretions, when vitiated, or greatly altered from their natural condition, may become the ex citing cause of numerous local diseases: in the skin, giving rise to different eruptions, and, in the mucous membranes, to various inflammatory and ulcerative conditions. *The mucous membrane of the mouth, and throat affords many illustrations of this remark; and I would especially refer to the instance of stomatitis ulcerosa, a disease which is often met with amongst strumous or unhealthy children, as the consequence of constitutional causes alone." -Dr F. W. Mackenzie, MD in*
"On the Relations of Uterine to Constitutional Disorder", London Journal of Medicine, April 1852.

"Lesions of the mucous membrane in Epidermolysis Bullosa (fragile blistering of the skin and mucous membranes). A survey of 37 cases reported in the literature in which the mucous membranes were involved revealed that the oral mucosa was affected in 27, the throat and the pharynx in 3, the oesophagus in 2, the eye in 3, the anus in 2, the penis in 4 and the intestine in 1. Involvement of the nasal and vaginal mucosae is not mentioned by any of the writers. **In 16 of the 27 cases in which the oral mucous membrane was affected, the tongue was involved**; in 15 cases the buccal mucosa was affected, in 7 the lips, in 6 the gums and in 5 the palate. **In all of the cases studied there were associated cutaneous lesions** (in several of the cases, there was multiple involvement).

Sites Affected:

1. The Tongue. The mucosa of the tongue was more frequently involved than any of the other mucous membranes, bullae (blisters) being the commonest lesions.
2. The Buccal Mucosa. The buccal mucosa, next to the tongue, was the mucous membrane most commonly involved.
3. The Lips.
4. The Gums.

5. The Palate.
6. Throat and Pharynx.
7. The Oesophagus.
8. The Penis.
9. The Eye.
10. The Intestine.
11. The Anus." - Dr Norman Tobias, MD, in "Lesions of the Mucous Membranes in Epidermolysis Bullosa", Archives of Dermatology, August 1928.

"An open wound is not necessary for penetration, since the bacilli can find an entrance through the epithelium."

In the face of this and of the fact which bacteriologic investigators had long since shown - that all sorts of bacteria, pathogenic as well as nonpathogenic - are in constant contact with the epithelium of the tonsillar crypts and there as well as elsewhere on the surface of mucous membranes the tubercle bacillus, of which there are many strains and various races, "though being the sine qua non of tuberculosis is, after all, practically, especially from a prophylactic or hygienic point of view, a minor element in its multitudinous factors."

Dr. Park, and I published a paper in "New York Medical Journal", 5 February 1895, **showing the mechanical factors taking part in the elimination of bacteria from the air current of the upper channels of the nose were gravity, filtering action of vibrissse in the nasal vestibule, the wash of sterile secretion from glands in the region not reached by the inmoving air current, and that the nasal mucus is a poor culture medium.**

It had been noted previously that the structure and secretions within the nasal cavities removed the vast majority of bacteria before the air reached the larynx (New York Medical Journal, 27 July 1889)." - Dr Jonathan Wright, MD in "Pages from the Ancient History of Bacterial Infection Through Mucous Membranes", Annals of Otology, Rhinology & Laryngology, March 1928.

Conserve The Mucous Membrane

"**The mechanical efficiency of the sound skin as a protective agent against the invasion of the body by micro-organisms is obvious. Little credit for a similar protection is usually accorded to the mucous membranes.**

It is true that the latter do not furnish the same degree of resistance or immunity which the external coverings of the skin afford. Nevertheless, it ought to be realized that many organisms can be implanted with impunity in mucous membranes, especially in those portions which are engaged in the production of mucous or which are provided with a ciliated epithelium as a safeguard.

The underestimated usefulness of the mucus secreted by the membranes of the nasal cavities is more easily appreciated when the circumstances to which they are exposed are related. It has been estimated that under normal conditions of life **in large cities, from 15,000, to 20,000 bacteria enter the nose in an hour's quiet**

respiration. Yet under normal anatomic and physiologic conditions few of these organisms ever reach the nasopharynx in a viable condition.

To some extent at least the mucus secreted is responsible for this.

It is reputed to have an inhibitory if not an actual bactericidal effect on germs; and a litre of mucus per day has been reported as representing the amount of available secretion. The highly specialized epithelium of the trachea and nose is further effective as a protection against unorganized dust.

Perhaps if this were more universally recognized and taught, ciliated mucus-secreting membranes would be treated in a less irritating manner.

How many physicians realize that when the ciliated cells are destroyed by caustics, operative procedures or disease, they are frequently replaced by squamous cells, and the efficiency of the nose as a protective organ is correspondingly impaired?" - in "The Journal of the National Dental Association", Vol.5, 1918.

Upper Respiratory Mucous Membrane as a Key to Error in Metabolism

"General disturbances of any type whatsoever first disturb the equilibrium of the circulation and thereby place its unfailing indicator in the mucous membrane of the upper respiratory tract, as a venous stasis from peripheral nerve ending paralysis, resulting in dilatation of the peripheral blood vessels with its accompanying relaxation of the mucosa.

So striking are the ramifications of the mucous membrane index in connection with the manifold ailments of the body, so absolutely true is the pointing of the hand, it is to be regretted that it is a hidden factor for alarm to so many of our general physicians.

In this class we have to deal with more than 80% of all nasal cases and, by its influence, in a great majority of inflammatory otitic (inflammation of the ear), pharyngeal and laryngeal cases.

In none of this 80% of nasal obstruction is the removal of any portion of the mucous membrane justifiable, unless it is found that the posterior turbinate ends are degenerated from long standing engorgement, with a resulting chronic hypertrophy or hyperplasia, of itself obstructive, or the same condition in the body of the turbinate, and then only to remove the hyperplastic bone or soft tissue with as little disturbance of the mucous membrane as possible; nor is it admissible, except in hyperplastic cases, to use the actual cautery.

Every scar or injury to the natural outline or surface of the mucosa will, in health, make its presence felt.

The toxic element from a gastrointestinal, fermentation or putrefaction standpoint has been the factor to which my attention has been directed more particularly.

By careful inquiry into the general symptoms, methods of eating and modes of living, one can almost always find cause for disturbance of the general

equilibrium." - Dr Charles Waldo Stickle, MD in "The Upper Respiratory Mucous Membrane as a Key to Error in Metabolism", Annals of Otology, Rhinology & Laryngology, December 1916.

"It has been known for many years that nasal respiratory mucous membrane must have cilia actively moving a thin sheet of mucus along in order to be normally healthy and that one without the other is more or less helpless.

For instance, in cases of atrophic rhinitis, in which the cilia are absent, the mucus remains stagnant and soon becomes infected. Conversely, when cilia are removed from their moist surroundings they soon cease to function.

The cilia are found abundantly in the nose and nasopharynx but not in the vestibule or oropharynx.

The action of the cilia is such that the posterior part of the nose receives a new coating of mucus about every 10 or 15 minutes.

The glands of the nasal epithelium are in 2 groups: simple type goblet cells, which secrete mucus, appear in the surface, while in the deeper tunica propria are found compound branched glands, which secrete either mucus or serum.

The amount of mucus normally produced by these glands in 24 hours has been estimated as 1 litre from the 2 sides.

With the exception of the goblet cells, these glands receive vasodilator, vasoconstrictor and secretory fibers from the autonomic nervous system.

The mucous membrane of the respiratory tract, especially that of the nasal portion, needs active cilia moving a sheet of mucus to be healthy.

Perfectly normal healthy nasal mucosa at times will resist the most virulent invader." - Dr. J. Kent Leasure, MD in "The Mucus Sheet on Respiratory Mucous Membrane", Archives of Otolaryngology - Head and Neck Surgery, January 1941.

The Role of the Mucous Membrane in Diseases of Nose, Throat, and Ear

"Comparing and contrasting the skin proper with the mucous membranes (the inner skin), one cannot help being struck with the great attention that has always been and is still being paid to the skin.

It has a history and a literature, and societies and journals devoted to its study.

Investigation and research have made the skin a favourite field for work, whereas the mucous membrane or inner skin has suffered comparative neglect as regards systematic study as an organ and a system in the animal economy; and yet the part played by this inner skin is of paramount importance and far exceeds that of the skin proper as a body protector and preserver against the inroads of disease.

For the functional activity of the mucous membrane it is indispensable that the surface should constantly maintain its natural moisture, and for this purpose a mucous secretion is continually being poured over it.

Mucus is not the simple solution that we are apt to consider it, but is of very complex composition and extraordinary function.

We know that it contains a protein radical and glucosamin - the nitrogen - containing carbohydrate of mucin, a non-fermentable sugar. This carbohydrate group is very rich in oxygen. Mucin also contains a very large amount of sulphur.

It has now been proved that mucin with its wonderful chemical composition has a barrier action against the entrance of toxic ferments and bacteria into the system, and this in virtue of the fact that the nitrogen containing carbohydrate is not fermentable, and is not affected by the oxidising and dissociating ferments of mammals.

Mucin is also highly resistive to putrefaction, and it was affirmed by Cohnheim that the peculiar physiological property of mucin makes the entrance of putrefactive bacteria a difficult matter, while the bactericidal properties also play a part.

One of the curious facts of pathology is that certain bacteria actually secrete a true mucin for their own protection against the attack of other bacteria.

Mucin belongs to the amido group. It is very rich in oxygen, however, and it is known that this oxygen is very loosely attached and can be, and is, readily parted with, and that it is in such a manner that enzymes (ferments) given off by virulent bacteria are destroyed and the body protected from their insidious and destructive ravages. The wide range and high value of mucin are therefore evident.

Structure and Function of Mucous

The moist and sticky surface of the mucous membrane catches up the innumerable particles of dirt and bacteria that enter with the inhaled air.

In order to carry out these purposes it is armed with 2 mechanisms of great value, one the secretion, mucous, and the other the ciliary action of the mucous membrane.

Once a stationary state becomes established, the bacteria and their toxins are likely to penetrate to the epithelial cells, and, by a solution of them through the production of enzymes – ferments - pass into the circulation.

There is now experimental proof that in the "carrier" state when the body is protected from the onset of various pathogenic organisms it is the mucus surrounding the bacteria that restrains their virulence.

This protection is not a real immunity in the essential meaning of the term, for its subjects often suffer an infection at a later date when the protective mucous barrier has gone.

This explains why the deadly meningococcus and the deceptive diphtheria germ can rest in the naso-pharynx, throat, and nose, their host remaining immune meanwhile, but may be readily transmitted to another person not equally protected. **The virulently toxic Shiga's Bacillus, in the same manner, can be lodged in the system for a long time without giving rise to toxic symptoms.**

It is now 22 years since I first drew attention to the value of mucin as a therapeutical agent in 2 papers published in "The Lancet", and research since that time has fully borne out its great usefulness.

The Ear from the Entrance to the Eustachian Tube Upwards

In considering the mucous membrane and the part it plays in diseases affecting the various regions, we will first take that tract running from the pharyngeal end of the Eustachian tube up through the middle ear and on to the apex of the mastoid. The Eustachian tube and the tympanic cavity are lined by a common mucous membrane with a ciliated epithelium. The mucous membrane varies in its consistency, in the number of mucous glands and lymphatics, and in the kind of epithelium.

There are few mucous glands in the tympanic cavity, but throughout there is a distinct development of the lymphatic layer. At the pharyngeal end of the Eustachian tube, where it bulges into the pharynx, and for a third of its length upwards, there is a marked development of the mucous membrane; the latter is thick and vascular, and the lymphatics and mucous glands are well developed and numerous. At this part these structures constitute a veritable lymphatic gland surrounding the tube, and this acts as a guard to the entrance, effectually stopping, destroying, and carrying away any septic organisms that might try to work their way into the tympanic cavity from the naso-pharynx.

The sea of lymph in the submucous lymphatics of the middle ear and Eustachian tube doubtless communicates with the parilymph and endolymph.

And in this way helps to maintain the tension in these situations, so essential for hearing and equilibration.

In oto-sclerosis, chronic catarrh of the middle ear, and chronic suppuration of the middle ear (residual) it is now found that there is an impairment of the labyrinthine function.

This may be because through disturbance or cessation of this lymphatic circulation the tension in the perilymphatic and endolymphatic channels is impaired, and, therefore, the chance of the specialised epithelium in the organ of Corti, maculae, and cristae interpreting the vibrations of the waves of pressure is diminished.

There can be little doubt that nearly all affections of the ear (especially now that nerve deafness is known to be largely influenced by middle-ear conditions) result from Sepsis introduced from below and passing upwards into the Eustachian tube from a septic pharynx-a failure of the mucous and lymphatic structures, stationed at the lower end of the Eustachian tube, to protect the vulnerable middle ear.

After many years experience I have come to the conclusion that chronic catarrh of the middle ear is a consequence of insidious sepsis, let into the tympanic cavity in this manner.

This would cause irritation, for septic organisms and their products are exceedingly irritating to delicate mucous linings, especially if their virulence is not restrained by the presence of mucous secretion.

These infections would also result not only in irritation and congestion of the mucous lining of the middle ear, but in desquamation of the superficial epithelial

covering, ending in atrophy. It has often impressed itself upon me that even otosclerosis must be a consequence of sepsis.

Once the mucous and lymphatic structures at the lower end of the Eustachian tubes are rendered useless, the passage is open, and tension not only in the middle ear, but also in the labyrinth, is reduced; nutrition of their structure is so altered that impairment and fixation follow.

Nose and Nasopharynx

In the nose and naso-pharynx the epithelial covering is everywhere ciliated except in the olfactory region proper, in the upper third of the nasal cavity. The lymphatic layer is also well developed throughout, and there is a great accession of it on the posterior wall of the naso-pharynx where adenoids accumulate.

The lymphatic layer of the mucous membrane is, also particularly well marked in the inferior turbihals, especially in the posterior half and on the posterior part of the nasal septum, in which situation mucous glands are specially abundant. The special functions of the mucus are pre-eminently displayed in the nose, where, being sticky, the mucus traps foreign bodies, dust, &c., and bacteria, entangles them, destroys them, dissolves them." - Dr W. Stuart-Low, FRCS, Surgeon, London Throat, Nose and Ear Hospital, in "The Lancet", 16 February 1924.

The Nostrils, Pharynx, and Mouth

"Here, in the form of the gelatinous polypi so familiar to surgeons, is a very common instance of an excrescence (abnormal outgrowth) of the mucous tissue.

In the nostrils, there may often be noticed, by those engaged in practice in the metropolitan charitable institutions, a growth, more or less distinct, situate upon the turbinate bones, and narrowing or obstructing greatly the, meatus of the nose.

I have seen many instances of this affection: in some, the membrane has been simply thickened and villous; in one instance, it formed a distinct projecting mass in each nostril.

In most cases, the affection is accompanied by an increased discharge from the nose, which is thinner than natural; in some, the secretions cannot come forward, and are consequently swallowed, or expelled by the mouth; the voice becomes thick, and the articulation indistinct, as it is in great snuff takers; the mouth is kept constantly open; respiration by the nose is difficult and sonorous; the patient is subject to sensations of suffocation and uneasy sleep and dreams; the shape of the nose is sometimes changed, as it is by ordinary polypi, but this is, in my experience, rare.

In some examples the disease has appeared to arise from the irritation produced by a diseased tooth, and has subsided on the extraction of the tooth.

Rectum: Here, besides the polypus, there is met with not infrequently a morbid condition very similar to others referred to in this paper - a condition in which the mucous coat of that intestine near its orifice is the seat of one or more vascular

excrescences of varying superficial area, and greater or less elevation, forming either villous patches or raspberry-like growths, and occasioning (sometimes to a degree that is very distressing) pain and heat in the parts, tenesmus, bloody and mucous discharges, a general irritable state of the digestive organs, with great impairment of the nutrition of the body.

They show no readiness to yield to any general treatment, but are for the most part like all similar productions, amenable to that which is local - the less severe forms being sometimes cured by cold astringent injections." - Dr. H. Burford Norman, FRCS, Surgeon, in "On Vascular Excrescences of the More Expose Portions of the Mucous Membrane and Certain Other Parts of the Body", British Medical Journal, May 1852.

The Influence of Warm Confined Atmospheres on the Mucous Membrane of the Nose and Throat

"We have investigated the conditions which pertain to the mucous membrane of the nose and throat under various atmospheric conditions.

Using a mirror and speculum, we have found that the mucous membrane flushes and swells, becoming turgid with blood and tissue lymph and covered with a thick secretion, when the subjects are confined in a warm moist atmosphere (80 deg. F).

At the same time the air-way is narrowed and even choked up in those who have a deflected septum. The mucous membrane of the nose and throat, just as the skin, is flushed with blood, and pours out secretion in order to cool the body.

After passing from the warm to a cold atmosphere we find the mucous membrane quickly becomes paler owing to constriction of the blood-vessels, but still remains swollen with tissue lymph, as is shown by its appearance and by the fact that it pits deeply when touched with a probe.

The altered conditions seem to us to be such as may increase the liability to infection.

In a warm crowded room the swollen mucous membrane of the nose of an individual, covered, as it is, with thick secretion, will be massively infected with bacteria explosively sprayed out by the other occupants who sneeze, cough, and speak in the room.

On passing out into the cold, misty, outside air the blood-vessels constrict, and at the same time the nose is chilled by the greater conduction of heat, due to the cold particles of water in the inspired air.

The defensive mechanisms of the blood, the immunising properties of the plasma, the cleansing action of the ciliated epithelium, and phagocytic action of the white corpuscles are diminished by the low temperature, while the pathogenic bacteria find a suitable nidus for their growth in the secretion and tissue-lymph of the swollen mucous membrane.

The immunity to "colds" of those who live an open-air life is well known.

Massive infection does not occur, and so long as they are exposed to the cold outside air the mucous membrane, like the skin, remains pale and taut, moistened with a scanty secretion.

Apart from the general question of health and immunity we believe it is the massive direct transmission of bacteria from one to another in warm confined atmospheres, and the subsequent exposure to the cold, moist outer air which together contribute to the infection of the susceptible I individuals.

We can lessen our liability to such infection by keeping the air of our rooms and crowded meeting-places cool and moving." - Dr Leonard Hill, FRS, Professor of Physiology, London Hospital Medical School, Dr Francis F. Muecke, FRS, Surgeon, London Throat Hospital, in "Colds in the Head", The Lancet, 10 May 1913.

Nutrition in Relation to Infections of the Upper Respiratory Mucous Membranes

"It appears from the results here reported that nutrition is an important factor in the treatment of chronic infection of the nose, sinuses and ears. A change in the nutrition program is necessary not only in the kind and amount of food eaten but also in the control of all of the environmental factors which may in any way influence the enjoyment and utilization of food.

Foods can be grouped rather simply so that the patient can plan meals to include in every meal some vitamins C, B, A, D and G, some satisfactory protein, and enough carbohydrates and fat to satisfy appetite and take care of caloric needs.

Food alone without vitamin and mineral concentrates can be satisfactorily chosen to meet all food needs. But carbohydrate foods have been so refined that much of their vitamin B is lost. And food is cooked so that again much of both vitamin C and vitamin B may be destroyed or discarded. Mineral and vitamin values differ in the same kind of food grown in different kinds of soil. And different varieties of the same kind of food differ in content of protective factors.

The nutrition history and the nutrition condition was studied in over 300 patients from the clinic of otolaryngology in the Medical School of Washington University.

These patients came to the clinic because of persistent chronic nasal sinusitis, chronic discharging ears, or a combination of these infections; or because of allergic manifestations of the upper respiratory tract, persistent headache, or a combination of allergy and infection.

One patient was followed for a period of 4 years. Other patients were followed for a period of 6 months to 1, 2, or 3 years.

All the patients seen were in need of an improved nutrition program. Their food habits indicated inadequate protective factors, especially Vitamins B and C, minerals and protein. Their meals were very often irregular both in the kind and the amount of food eaten and in the times of eating. **Rest, relaxation and outdoor activity were often very inadequate.**

Whenever there was improvement in the nutrition program it was found that in 3 to 6 months improvement was occurring in the condition of the nose, sinuses and ears.

Often the patient appeared entirely free of infection. When the improved nutrition program was discontinued, however, there was usually a return of the infection. **The most common inadequacies found were vitamin B and vitamin C.**

Many diets studied lacked optimum vitamins A, D and G, calcium and iron and protein.

Some data are reported to show that individuals with chronic infection have less vitamin C in the blood and urine than normal individuals who take the same amount of vitamin C in their diets.

Also some data are presented to show that more vitamin C is needed by people with chronic infections than by normals to bring about an increase in the vitamin C content of the blood. One case is reported to show that blood vitamin C can be increased after 3 to 4 months of intravenous injection of this food factor when blood vitamin C increase failed during the time that vitamin C was given by mouth only.

There appears to be an improvement in the condition of the nasal mucous membrane after blood vitamin C has been increased and remains at a high level for several months." - Dr Rossleener Arnold Hetler, PhD, in "Annals of Otology, Rhinology & Laryngology", September 1937.

Dermatology and Associated Disorders of the Mucous Membranes

"One of the proper and important functions of the dermatologist is the study and interpretation of disorders of the mucous membranes.

The occurrence of papules and of vesicular and exudative processes in the mucous membranes, resulting in erosions, plaques and ulcérations, is observed as part of the symptomatology of a variety of diseases.

Those of especial interest to the dermatologist, aside from syphilis, are the lesions of the mucous membranes which occur in association with disorders classified as typically cutaneous.

Represented in this group are lichen planus, erythema multiforme, dermatitis herpetiformis, the 3 varieties of pemphigus, erythematous lupus, lupus vulgaris, herpes and impetigo herpetiformis, mostly dermatoses of constitutional origin.

Involvement of the mucous membranes is of regular occurrence in several of these conditions and may, in fact, precede the cutaneous symptoms or, in rare instances, be the only manifestation of the disease.

A tabulation made by Trautman (as quoted by Montgomery) of 157 cases of Lichen Planus of the mucous membranes, shows that the skin was primarily affected in 14 cases, coincidentally affected in 94, subsequently affected in 19, and that in 26 instances the mucous membrane lesions existed alone.

Lichen Planus: swelling and irritation in the skin, hair, nails and mucous membranes, on the skin, lichen planus usually appears as purplish, itchy, flat bumps.

Lupus Erythematosus

"The plaques, which may by confluence rapidly involve the entire lip, have the same margins with similar vascular ectasia or similar fine white tracery (as observed on the buccal mucosa). The delicate network of white striae is especially distinct within the margins of lesions on the vermilion of the lip. This is a feature which is observed repeatedly and which has not been given sufficient prominence in descriptions of the affection. The colour of the lip is violaceous; the lip is slightly swollen and often everted. As a rule, in recent cases the lip is so heavily covered with scalelike, large, thin, epithelial lamellae and with bloodcrusts, that the details just described are seen only in part or not at all. The lip then presents the appearance, as described by Dubreuilh, of having been painted with collodion which is peeling off. After maceration of the lamellae and crusts, irregular red areas with concave margins may be observed in the violaceous labial mucosa, which is stippled with white dots. Especially noticeable is the readiness with which bleeding of the affected labial mucosa occurs upon slight movement, a condition which is rarely observed in the oral mucosa." - Kren, in O. Arch. f. dermat. u. syph. 83: 13, 1907.

Other Affections Producing Lesions

The mucous membranes may participate in the symptomatology of a number of other dermatologic conditions, too numerous for detailed discussion at this time.

It is well to recall, however, that dermatitis herpetiformis may present lesions on the tongue, lips, cheeks, conjunctiva, prepuce and labia, usually of marked inflammatory nature and attended with burning pain.

Urticaria, angioneurotic edema and purpura often involve the mucous membranes of the mouth, nose and alimentary tract.

Recently, Mook has described a series of cases of pemphigoid dermatitis following vaccination, several of which presented oral lesions; an allied condition was described by Howe, 6 out of 10 of his cases ending fatally, with marked involvement of the oral mucosa.

Several of the constitutional diseases, scurvy, pellagra, acute leukemia and pernicious anemia, not infrequently affect the mucous membranes." - Dr O. H. Foerster, MD, in "JAMA", 30 August 1919.

Reflex Vertigo Treated by Cauterizing the Nasal Mucous Membrane

"Hack reports 2 cases of vertigo caused presumably by an hypertrophy of the lower nasal mucous membrane. The symptom disappeared after applications of the electro-cautery to the diseased membrane.-Berlin. Klin. Wochen., 29 Jan. 1883." - in "Journal of Nervous & Mental Disease", March 1883.

The Regeneration of Mucous Membrane in the Human Antrum

"The experiments that Dr. Knowlton and I carried out on dogs were performed to find out what actually happens. They demonstrated that the mucous membrane of the antrum regenerates and is histologically normal. The regenerated mucous membrane must, of course, come from islands left at operation or grow in from the nose.

The epithelia of the body stand pre-eminent in their capacity for complete regeneration (Adami 1908).

Cells have an inherent tendency to multiply, and nowhere in the body will nature tolerate a surface denuded of epithelium whether it is skin or mucous membrane.

The Regeneration of the Epithelium

Fischer found that cultures of epithelial tissue double their size in 3 or 4 days. Balbiani and Henneguy showed that the ends of the tails of 2 tadpoles (the larval stage in the life cycle of an amphibian) placed in contact after scarification grew together in an hour and a half by means of the superficial growth of the epithelial cells.

It is well known that where fistulous tracts occur leading into bone the epithelial cells, owing to their spreading property, may grow into the fistula and line the bony cavity. Large cavities occurring in the tissue of the lung may become lined with a layer of epithelium.

The tremendous healing power of the skin is an everyday demonstration of the activity of epithelial tissue.

Heape found that the uterus of the monkey was relined with epithelium about 7 days after menstruation and about 14 days after pregnancy.

O'Leary saw epithelization begin in the human uterus on the fourth day after menstruation.

On the 7 day, the surface epithelium was complete in all the blocks he examined, but it varied in different areas from a high columnar type to a low flattened form. By the 9 day, the surface epithelium was complete, but was not of uniform height.

Even in the stomach in which epithelial regeneration has to contend with almost constant muscular activity and the irritation of foods and gastric juices,

Ferguson, working in Dr. Bensley's laboratory at Chicago, demonstrated that the gastric mucosa regenerated at the rate of 2 mm., per week over areas from which 25 sq. cm., had been excised. Not only the epithelium, but the specialized gland cells as well regenerated.

In 1928, Knowlton and I demonstrated in dogs and in human beings that the mucous membrane of the antrum completely reformed after complete removal.

The regenerated epithelium was of the ciliated columnar type and contained goblet cells. The underlying connective tissue stroma was thin and contained glands. The new lining was essentially normal.

Method of Repair

The antrum offers an excellent location for regeneration and growth of tissue. It is surrounded by an abundance of blood vessels and nerves, and no sutures or other foreign bodies are required after operation which might interfere with or cut off the blood or the nerve supply to the traumatized area. It provides warmth, moisture, comparative freedom from disturbing currents of air and ample nutrition, and were it not for the presence of infection it would be an ideal place for the growth of new epithelium. As has been said, as early as 16 days after operation there is definite, unmistakable evidence of the growth of young epithelial cells on the surface of the cavity.

There is no known exception to the rule that in regeneration epithelial elements develop from the pre-existing epithelium. Apparent exceptions are due to the transplantation of living epithelial cells to the granulating surface.

When all the epithelium has been removed from the antrum, the epithelium of the nose can readily grow into the antrum, not only from the edges of the intranasal opening but also from the natural ostium and the accessory ostium, if present. Within a few days, a luxuriant growth of healthy granulation tissue is formed, which is composed of young fibroblasts and masses of loops of young budding capillaries waiting to receive and nourish any epithelium. No matter how carefully or completely the epithelium is stripped from the bone, microscopic patches of connective tissue cells of the periosteum will be attached to the bone, and these will almost immediately begin to proliferate, for connective tissue is the most active of all the regenerating tissues in the body. If necessary, the bone cells could easily revert to the function of forming connective tissue.

It is known that within 2 hours after the removal or destruction of epidermis, whether of the outer skin, tongue or mucous membrane, the cells of the deeper layers and even the columnar epithelium exhibit definite changes in warm-blooded animals.

At the edge of the wound the fully formed columnar cells lose their cilia, become more cubical and ultimately flatten and undergo a translation over the exposed surface. Within 24 hours the epithelium surrounding a wound is distinctly thinned and composed of fewer layers, while at its edge a single layer of flattened cells stretches out over the wounded surface.

These marginal cells pass through a cycle of transformation in response to injury. At first they are dedifferentiated into basic cells which multiply by mitosis and migrate over the denuded area.

These basic cells have 3 inherent possibilities locked up within them. They will later specialize into ciliated cells, goblet or secreting cells and supporting cells, and thus the cycle is completed. The inherent cellular possibilities probably respond to environment and necessity and finally exist in a state of balanced relationship.

This explains the abundance of goblet cells found in the regenerating epithelium in the antrum before the racemose glands are formed.

The whole picture is that of a general reparative response to trauma, and while nature repairs injury in excess, this excess is gradually withdrawn as the need for its presence is reduced.

For some reason, excessive granulation tissue is prone to form in some cases. This is commonly seen in surgical intervention on the mastoid. It applies also to the antrum.

Glands: Basic cells at first compose the regenerating layer of epithelium. These cells soon begin to invaginate into the stroma, and glandular anlagen are formed.

Further transformation and specialization take place until the cells are fully equipped to complete their function as mucous-secreting glandular cells.

Conclusions

1. Ciliated columnar epithelium and glands regenerate in the human antrum following a radical operation.
2. It probably requires six months for the regeneration to approach normal.
3. Infection does not prevent regeneration, although it may modify its character.
4. Debilitating disease does not prevent regeneration.
5. Regeneration was seen to be considerably advanced as early as 16 days after operation; it must therefore begin at an earlier date." - Dr Gregor McGregor, MB, in "Archives of Otolaryngology - Head and Neck Surgery", September 1931.

"The natural history of the diseases of any texture is made complete only by the study of those diseases in the various positions, circumstances, and connexions, in which such texture is found.

And so also of any special form of disease of a particular texture, we must search for the information we desire in the whole extent of such texture. I may at once refer to a particular form of morbid growth of a given tissue: the mucous.

Amongst other morbid changes, this tissue is in an especial manner liable to become the seat of excrescences (abnormal outgrowth), which assume, according to various circumstances, the forms of granulations, polypi, etc." - Dr H. Burford Norman, FRCS, Surgeon, North London Infirmary for Diseases of the Eye, in "On Vascular Excrescences of the more Exposed Portions of the Mucous Membrane and Certain Other Parts of the Body", London Journal of Medicine, May 1852.

"We have observed 14 patients in the past 3 years with Pityriasis Rosea (skin rash) associated with lesions on mucous membranes. In all of these patients the buccal mucosa was involved. It is interesting to find pityriasis rosea as another member of the papulosquamous diseases of the skin presenting at times lesions of mucous membranes." - Dr Jacques P. Guequierre, MD, Dr Carrol S. Wright, MD in "Pityriasis Rosea with Lesions on Mucous Membranes", Archives of Dermatology, June 1941.

The Inflammation of Mucous Membranes

"In an annotation (Fatal Intestinal Haemorrhage in Pneumonia, The Lancet, 17 August 1901) we have recently called attention to the numerous affections which may be produced by the pneumococcus.

The subject was very exhaustively discussed by Mr. Alexander G. R. Foulerton at the recent annual meeting of the British Medical Association (The Lancet, 17 August 1901).

But his admirable paper contains no allusion to membranous inflammations of mucous membranes of which the following case, published in the American Journal of the Medical Sciences for September by Dr. Charles Cary and Dr. Irving P. Lyon, is a remarkable example. A boy, aged 11 years, was taken ill with sore throat on 5 January 1901.

On 7 January the throat was reddened and there were incipient signs of pneumonia at the base of the left lung. On 11 Jan. the right base was also affected and an abundant white exudation covered both tonsils.

Next day herpes appeared on the lips and the exudation was more or less diffused throughout the mouth and throat. On 13 Jan. there were fibrinous conjunctivitis and subconjunctival haemorrhage and the lids were swollen and adherent.

The mucous membrane of the lips, gums. Cheeks, margin and under surface of the tongue, hard and soft palate, fauces, tonsils, pharynx (as far as could be seen), and nose was covered with a continuous white exudation, which could be torn off in shreds, leaving a raw granular bleeding surface. The boy picked at his nose and lips and thus apparently transferred infection from one place to another.

On 15 Jan. the glans penis showed the same membranous inflammation as the other parts. On 16 January the anus was involved and membranous shreds were found in the stools. For several days there had been tympanites and the stools had been frequent and soft and had contained considerable mucus.

Respiration was laboured from accumulation of mucus in the upper air passages. The sputum contained fibrinous casts of the finer bronchi with dendritic processes, a few red blood corpuscles and numerous pneumococci. The organism, practically in pure culture, was also found in the exudation on the various mucous membranes.

The diphtheria bacillus was absent.

The membranes persisted for about four weeks in spite of antiseptic treatment.

That the pneumococcus is capable of causing such membranous exudations is attested by various observers.

Bristowe in 1879 mentioned that membranous patches on the mucous surface of the large intestine were sometimes found in pneumonia.

Osler, in 1885, reported 5 cases of "croupous colitis" (Severe diarrhea in pneumococcal bacteremia) in 100 necropsies on subjects who had died from pneumonia.

In 1 case the caecum was covered with a thin layer of adherent lymph and scattered throughout the colon and sigmoid flexure were numerous patches of lymph. Weichselbaum found the pneumococcus in the intestinal croupous exudation in a case of pneumonia.

Rochon has described the case of a boy, aged 2 years, who during whooping-cough developed severe and continued diarrhoea with an eruption of vesicles about the anus. In the fluid of the vesicles the pneumococcus was found in pure culture. **During coughing prolapsus recti (rectal prolapse) occurred, revealing in places on the mucous membrane exudation which contained numerous pneumococci. Pneumonia and death followed.**

Wetter has reported the case of a boy, aged 3 years, in which during an attack of varicella tracheotomy was required for laryngitis. Membrane was expelled through the tube containing no diphtheria bacilli but pneumococci.

Cases of pneumococcic membranous inflammation of the throat, conjunctiva, and nose simulating diphtheria and independent of pneumonia have been recorded.

But in most of the cases of pneumococcic conjunctivitis the inflammation could hardly be called membranous, it was characterised by small fibrinous shreds which were sometimes lightly adherent to the mucous membrane.

When it is remembered that the pneumococcus is par excellence the cause of fibrinous inflammation of the lungs the occurrence of the same process on other mucous membranes should not cause surprise." - in "The Lancet", 17 August 1901.

Therapeutic Action of the Natural Mineral Springs Waters Upon the Mucous Membranes

"During a short sojourn at Cresson Springs, last summer, I became acquainted with the mineral springs of the place; and having observed their therapeutic value on some persons staying there.

There are at Cresson three springs:

One a very strong iron spring, which, according to the analyses made by the Pennsylvania State Survey, ranks with the best so-called steel springs of Europe; a ferruginous alum and a weak magnesia spring.

These waters I used on a number of patients suffering from chronic catarrhal inflammation of the upper air passages, in the form of spray applied locally to the diseased mucous membrane and the iron and magnesia waters internally with proper regulation of the diet of the patients.

Thus I found that the ferric alum water had a decided tonic and stimulating effect in those cases of atrophie nasal catarrh, which were complicated with pharyngitis sicca and chronic laryngitis, and that the beneficial effect of the local applications was very soon apparent to the patient.

The iron water I found to have no very decided effect upon these cases, but to be of great value in cases of follicular pharyngitis and in the milder forms of hypertrophie nasal catarrh, as well as in cases of ordinary simple chronic laryngitis and bronchitis.

The water is sufficiently alkaline to soften the secretions and to cleanse the mucous membrane.

The magnesia water locally applied gave no results whatever, and I very soon desisted in using it for topical applications, but found it a valuable adjuvant in the treatment of patients suffering from lythsemic inflammations of the mucous membranes of the upper air passages. In these cases the patient was directed to drink the water freely, and its slightly diuretic effect soon became apparent.

The iron spring also is somewhat diuretic in its action, but it is chiefly valuable as a tonic particularly in cases with feeble digestion.

Artificially prepared solutions of iron and ferric alum which I used in a number of cases similar to those which were treated with the natural waters, did not have the same effect, and this fact strengthened my belief that it seems impossible to manufacture an artificial mineral water in the laboratory of the chemist which is equal in its value to that produced in Nature's laboratory.

Almost all the European authors on diseases of the lungs and upper air passages lay great stress upon the value of the natural mineral waters in the treatment of these disorders, and advise their patients to go to one or the other of the many watering places on the continent.

In Europe, however, the effects of the different mineral springs are well known to every educated physician, and when he sends a case to a watering place it is not a random patient which perhaps he is anxious to get rid of for a time, but he selects that mineral spring which is most suitable for the disease from which the patient is suffering.

As soon as the medical profession and their patients realize this important fact, our valuable mineral springs will cease to be a mere pretext for our fashionable patients to spend a few weeks at a watering place, and will become what they ought to be today: valuable adjuncts in the treatment of most chronic diseases.

Springs of this kind properly used will exert a beneficial effect upon catarrhal inflammations of other portions of the mucous membrane." - Dr Carl Seiler, MD, Instructor in Laryngology and Lecturer on Diseases of the Upper Air Passages, at the University of Pennsylvania in "The Therapeutic Action of the Natural Mineral Springs of Cresson Upon the Mucous Membrane of the Nose and Throat", Journal of the American Medical Association, 13 December 1884.

Aloe Vera in the Treatment Ulcers of Mucous Membranes

"In 1935, Collins in "Roentgen Dermatitis Treated with Fresh Whole Leaf of Aloe vera, Am. Jour. Roentgenol. and Rad. Ther., March 1935", published a favourable report on the treatment of roentgen dermatitis with the fresh whole leaf of Aloe vera.

Later that year Collins in "Alvagel as Therapeutic Agent in Treatment of Roentgen and Radium Burns. Radiol., Rev. and Chicago Med. Rec., June 1935", added a report on the use of an ointment of Aloe vera as a therapeutic agent for roentgen and radium burns.

Probably the most recent and authoritative information, worth quoting at length to bring it to the attention of radiologists, comes from MacKee, who says:

> *"During the past 2 or 3 years excellent results have been obtained with the jelly obtained from the leaf of a plant called Aloe vera. The leaf should be kept in a cool, moist environment. It is customary to cut a piece of the leaf to the size and shape of the lesion. The convex shell layer is removed. The jelly is placed in contact with the floor of the ulcer and held in place with a bandage. Dressings are changed once or twice daily. The treatment appears most effective in the case of indolent roentgen and radium ulcers. Often the pain disappears within 1 day or 2 and healing takes place in a few weeks or a few months - more often the latter. The writer can vouch for the good results in a fairly large percentage of indolent ulcers. Good results have been obtained also in ulcers that occur early in third-degree reactions. To obtain satisfactory results it seems necessary to use the fresh leaf. Preparations on the market which contain the Aloe vera jelly have been thus far unsatisfactory. It is thought that the good results are due to vitamin D." - Dr George M. Mackee, MD in "X-rays and Radium in the Treatment of Diseases of the Skin", 1938.*

Approximately 3 and 1/2 months following radiation therapy the jelly-like substance of fresh Aloe vera leaf was held by the patient within the mouth for from 1 and 1/2 to 13 and 1/2 hours daily for a period of 8 weeks, averaging 7 hours daily.

Relief from pain was prompt and definite and the ulcer slowly grew smaller. Saline mouth washes were used between and after this Aloe vera therapy. Five weeks later a single sequestrum of the upper right mandible was lifted off with forceps. In another 5 weeks the ulcer was completely healed." - Dr Frederick B. Mandeville, MD Professor of Radiology, Medical College of Virginia, Richmond, Virginia, in "Aloe Vera in the Treatment of Radiation Ulcers of Mucous Membranes", Radiology, May 1939.

Chapter 37

Neurasthenia

"Neurasthenia was first identified in the United States by George Beard in 1869. Beard, a neurologist, created this diagnostic label to describe a set of symptoms consisting of fatigue, anxiety, headache, impotence, neuralgia, and depression." - Jacquelyn H. Flaskerud, RN, in "Issues in Mental Health Nursing", 2007.

"Fatigue is one of the most common symptoms encountered in medical consultations. Both primary care and community studies have found that around one quarter of all people report recent problems with fatigue. Most consider it to be an extreme and persistent form of mental and or physical tiredness, weakness, or exhaustion. ***Up to 2/3 of people reporting fatigue lasting longer than 6 months will also be suffering from a co-morbid psychiatric disorder."*** *- in "The relationship between fatigue and psychiatric disorders: Evidence for the concept of neurasthenia", Journal of Psychosomatic Research, 2009.*

"To all who are exposed to excessive and prolonged attacks upon the citadel of their vitality, capitulation of their resistive power may follow at any moment, and unless such early warnings of waning energies as sleeplessness, incapacity for mental concentration, physical languor, and disturbed digestion are given heed to and counteracted by proper means, the sufferer will inevitably find himself ere long in the midst of neurasthenic tribulations, from which it will be tedious and difficult for him to emerge.

Bouchard attributes the disorder to abnormal fermentations in a stomach which, in virtue of congenital weakness of its muscular coat, contracts insufficiently in the intervals between different periods of digestion.

Under these circumstances he believes that soluble toxins are produced which, when reabsorbed, impair the anatomical elements of the different organs, and notably those of the nervous centres. Another theory suggests that **the disease is due directly to vitiation of nutrition, the result of imperfect digestion.** The dyspepsia need not, according to the advocates of this hypothesis, be necessarily associated with gastric dilatation, but it produces, sooner or later, anaemia, which in its turn gives rise to depression of the nutritive activity of all the tissues of the body, and more particularly of the nerve elements.

Glenard has endeavoured to explain both the dyspepsia and the neurasthenic symptoms by a sinking of the viscera in the abdominal cavity; **Enteroptosis. There is prominence of vasomotor phenomena in the symptomatology of the disease.**

The frequent association of Neurasthenia with Graves's disease, Osteo-arthritis, and the Menopause in women, **in all of which vasomotor disturbance plays a**

prominent part, in the light of recent research, it may well be asked whether all of them are not due to one or more toxic influences.

All forms of excess predispose to its occurrence; it is therefore not infrequently the Nemesis of a life spent in luxurious idleness and self-indulgence.

Headaches are invariably associated with neurasthenia, and the patient is seldom free from them on first waking in the morning. The head sometimes feels as though it were encased in an unyielding iron frame-the "caeque neurasthenique" of the French.

The pain is usually vertical or occipital in distribution, but it may involve the whole cranium. It is subject to acute exacerbations under the influence of the slightest fatigue or excitement, and it always leaves behind such hyperaesthesia of the scalp that for days it may be almost impossible to brush out the hair.

A mild form of Vertigo sometimes accompanies the Headache, but it is not associated with aural symptoms. The muscles, especially those of expression, are tremulous when put into use, and one or other set of them may become the seat of unpleasant and uncontrollable colonic spasms.

When the tremor affects the whole muscular system, it closely resembles that met with in cases of exophthalmic goitre. Every muscular effort is quickly followed by a distressing sense of weakness, which varies in intensity from day to day, but never goes the length of a true paralysis.

The instability of the vasomotor system is manifested by flushings, sweatings, cold hands and feet, throbbing vessels, and palpitation.

The knee-jerks are exaggerated, and possess this striking characteristic that when the patellar tendon is tapped in the ordinary way the resulting reflex movement is not confined to the leg, but often extends to the trunk of the body, so that the patient is jerked off his seat by the violence of the reflex act.

In a patient under present observation the consequence of tapping the patellar tendon goes even further than this, and invariably brings about an epileptiform attack of a hysteroid character. In marked contrast to this hyper-excitability of the patellar tendon the plantar reflex is either feeble or entirely absent, and the toe-phenomenon is always flexor. Sleep is always disturbed, and is often prevented by spasmodic jerking of the limbs, rushing sounds in the ears, extreme abdominal distension, or a sense of fullness and pulsation in the head.

When at last, in the early hours of the morning, the patient drops off, the rest he gets is broken by dreams, often of a terrifying nature, and after a few hours he wakes unrefreshed, and with a sense of inertia, as though he had never closed his eyes.

The special senses are upset in various ways. The visual field may be contracted, there is frequently indistinctness of vision from asthenopia, and muscae volitantes are a source of constant worry. Buzzing noises in the ears are complained of, and are sometimes accompanied by impairment of hearing.

A bitter taste in the mouth may entirely prevent the enjoyment of food, and subjective sensations of smell may haunt the nostrils continually.

Common sensation is impaired either in the direction of hyperaetliesia, paraesthesia, or anaesthesia. Muscular or neuralgic pains are seldom altogether absent.

They are situated, for the most part, in the back, whence they radiate to the legs and arms. Not uncommonly one particular vertebral spine is tender to touch, and is referred to as the centre from which all the shooting pains emanate.

In women the coccyx is sometimes the seat of acute suffering, and the 5th or 6th intercostal nerve on the left side is, in some unaccountable way, often selected for neuralgic manifestations.

The general intellectual condition is variable, but its most prominent characteristics are loss of memory and difficulty of mental concentration. A more or less marked degree of amnesia is often the first indication of failing mentation (mental activity). The patient forgets the names of individuals, and has a difficulty in finding the proper words to describe familiar objects. In writing, he misspells his words and expresses himself badly. The effort of conversation or writing soon becomes, like every other effort he makes, followed by profound exhaustion." - Dr I Guthrie Rankin, MD, Physician to the Dreadnought Hospital, in "Neurasthenia, The Wear and Tear of Life", The British Medical Journal, 2 May 1903.

The Menopause

"The free action of the Emunctories should be carefully maintained throughout this period.

The menopause affects the kidneys by checking secretion.

Attention to food products and proper exercise should be given the preference over drugs wherever this is admissible.

Change of life is not a disease.

The key to the treatment, is to remember the hypersensitive state of the reflexes." - in "The American Journal of Nursing", November 1904.

Intestinal Stasis

"Intestinal stasis may exist in one of many degrees and forms.

Acute stasis results only when intestinal obstruction is positive and is brought about by a pathologic state causing blocking or constriction, or by a complete intestinal paralysis from some interference with the neuro-muscular function of the bowel. It may occur either in the small, or in the large, intestine.

Acute stasis from, Obstruction in the small intestine may be due to:

1. Intussusception.
2. Hernia.
3. Volvulus.
4. Adhesions or kinks.
5. Foreign body.
6. Ulcers and cicatrices.
7. Peritonitis, general or local.
8. Pressure upon the intestine by tumour, or by another organ.

The ileo-caecal region is especially apt to be the seat of some of the above conditions, for instance:

1. Appendicitis.
2. Bands, adhesions and kinks.
3. Intussusception.

Regarding obstruction in the large intestine the most common forms met with are:

1. Carcinoma.
2. Cicatrices.
3. Foreign body or faecal impaction.
4. Bands causing constriction.
5. Intussusception.

Chronic stasis in one part, or in several parts, of the intestinal tract may be caused by:

1. Adhesions from localized peritonitis, due to gall bladder or gall-duct disease, pancreatic or retroperitoneal disease, appendicitis, diverticulitis ulcers, carcinoma or pelvic disease, veils or membranes in the ileo-caecal region, intestinal displacements, atony, pressure upon the intestine, hernia, cicatrices enteroliths, foreign bodies or faecal impaction and spasm, as in dynamic ileus.

Post-operation intestinal stasis may occur:

1. After extensive resections.
2. With the vicious circle.
3. In spreading peritonitis.
4. After ileo-sigmoidostomy.
5. From the development of kinks.
6. In cases of paralysis of the bowel.
7. After cautery resections from dense adhesions surrounding pockets of pus.

With regard to colonic ptosis it is the most common cause of intestinal stasis and constipation.

How does Enteroptosis with its common accompaniment real and persistent chronic constipation, and its various complicating or etiologic pathologic conditions affect or deplete health?

May be answered in part in this way:

1. By its toxic effects.
2. By interfering with the splanchnic circulation.
3. By exciting unhealthy conditions of the colonic mucosa.
4. By its possible effect in causing appendicitis.
5. By its possible effect in causing pelvic displacement.
6. By its drag on the mesentery causing backache and misery.
7. By its reflex upon the mind, the vasomotor circulation and the whole nervous system.
8. By its induction of premature old age, because of its interference with the nutrition of the heart, arteries and body musculature.

It impairs the lasting power under mental, nervous or physical strain, and those in whom it is found in a marked degree nearly all exhibit decided underweight.

While it is compatible with fair health and great activity, it predisposes to chronic disease and to inefficiency in life's contests.

In some cases it leads to, and perpetuates, chronic invalidism and neurasthenia and constitutes a sufficient menace to health to warrant surgical procedures for its possible correction or amelioration.

The most serious colonic stasis I have ever seen followed ileo-sigismoidostomy, and I feel that surgery should not be resorted to until after thorough rest, supportive, gymnastic, mechanical, postural, dietetic and other modern medical treatment has been thoroughly tried and has proved a failure." - Dr Allen A. Jones, MD, in "New York State Journal of Medicine", October 1915.

"Dr. James T. Case, Battle Creek, Michigan: There are several points to which I would like to call special attention.

First, I want to speak of the question of prolapsus. I note with pleasure the tendency everywhere noticeable to discount the importance of prolapsus of the stomach and bowel, as a factor in the production of stasis.

The terms prolapsus and stasis are by no means synonymous. Neither are the terms intestinal stasis and intestinal toxemia by any means synonymous. In spite of very marked intestinal stasis, a patient's constitutional defenses may enable him to take care of the products of intestinal stasis, and he may be symptomless. On the other hand, a patient with only slight intestinal stasis may suffer extreme toxicity.

My experience in the roentgen examination of some 6,000 cases, a considerable number of these patients later going to operation, has convinced me that the question of morphology and position is of relatively small importance, the question of function being paramount.

Colonic stasis does not occur in the transverse colon, but in the caecum and ascending colon, and in the pelvic colon.

That this is true is supported by the fact that carcinoma of the colon is most frequent in the pelvic colon and in the caecum.

Carcinoma of the transverse colon is extremely rare, and if the transverse colon were a common seat of stasis, we would expect the much more frequent occurrence of carcinoma in this portion of the bowel.

Obstruction is not commonly caused by angulation at the flexures. I have very rarely seen obstruction at the splenic flexure.

Obstruction does occasionally occur at the hepatic flexure, due to the constricting upper fibres of a Jackson's parieto-colic membrane or to adhesions extending from the gall bladder.

Obstruction from these adhesions, however, is not common.

The stasis in the right half of the bowel, which is interpreted by many as being due to kinking at the hepatic flexure, is in reality due to an entirely different cause, viz., exaggerated antiperistalsis.

Antiperistalsis occurs in the proximal colon beginning in the transverse colon, just beyond the hepatic flexure. Under conditions of obstruction in the distal colon, whether organic or spastic, this antiperistaltic influence is increased.

As a result, in cases of colitis affecting particularly the iliac and pelvic colon, we find a marked spasticity with narrowing of the lumen of the bowel in the left half, and a corresponding dilatation of the cecum and ascending colon with stasis in the cecum and ascending colon.

The writer is convinced that in the majority of cases of stasis in the proximal colon, the cause is not located at the hepatic flexure, but in the distal colon; and the stasis is due, as above suggested, to increased antiperistaltic influences.

That sharp flexures do not afford a serious hindrance to onward peristalsis is suggested by the following observation:

You have all observed that the colon shadow is ordinarily serrated, the

serrations being due to the contractions of the haustra coli. These haustra offer a serious impediment to the sudden onward propulsion of colonic contents. It will be remembered that the principal onward propulsive activity of the colon is a mass movement first described by Holzknecht in 1909.

During this mass movement the haustral markings of a certain segment of bowel content disappear and the outline of this bowel mass becomes perfectly smooth and sausage shaped.

A ring contraction proximal to this sausage-shaped mass moves it suddenly into the distal colon at about twice the rate of peristaltic waves in the stomach.

Picture a so-called prolapsed colon, the cecum and transverse colon reaching well toward the pubic bone, with the flexures in their normal high position, certainly just such a case as would present a hindrance at the flexures, if sharp angulation were really a cause of obstruction. Yet in scores of such cases, with the patient standing erect, the writer has seen the occurrence of these mass movements, a large segment of the content of the ascending colon being suddenly formed into this sausage-shaped mass and traveling rapidly around the "sharp" hepatic flexure, down into the prolapsed transverse colon and up the long stretch of 12 or 15 inches to the splenic flexure, around its "sharp" angulation and down into the descending colon, without the slightest suggestion of any hindrance having been offered at either "sharp" turn.

It does seem that a study of the function of the bowel is of much greater importance than a study of its morphology or position.

I have noted with interest the remarks by Dr Chambers on ileo-cecal valve incompetency.

Dr Bettmann stated that ileo-cecal valve incompetency had been observed in normal as well as pathological individuals. I would like to take exception to his use of the word normal, and suggest the use of the word symptomless, instead of normal. I quite agree that many individuals who are apparently free from symptoms of individual toxemia do show incompetency of the ileo-cecal valve.

This does not by any means prove, however, that ileo-cecal valve incompetency occurs in normal individuals. In the light of our knowledge concerning the production of stasis in the right half of the bowel – through obstruction, either spastic or organic in the left half, with increased antiperistalsis and dilatation and stasis in the right half of the colon, it seems perfectly reasonable that if the one-way ileocecal valve be incompetent, the result will be a backing up of material from the cecum into the small bowel, or at least slowing of the stream from the small bowel into the cecum.

Of course, ileal stasis due to this cause is a secondary affair, and its importance should be considered only secondary.

Nevertheless, it has been found feasible to restore the competency of the ileocecal valve (Kellogg's method) during abdominal section for other causes, and in the post-operative examination of such cases (more than 150) the writer has found the ileal stasis very much diminished or entirely eliminated in the great majority of instances." - in "New York State Journal of Medicine", October 1915.

Occlusion of the Intestinal Canal by Masses of Faeces

"Ileus Paralyticus"

Conditional upon Habitual Constipation

"Constipation, it is a symptom of different pathological processes and of very varying significance. While, as a temporary condition or as the accompaniment of various affections, it has scarcely any real clinical interest, yet, in other cases, in constriction and occlusion of the intestine, it belongs among the symptoms which are most important in the diagnosis and prognosis.

In 1/3 set of cases constipation has a certain independence; it causes a series of symptoms in different and distant organs, and is the starting-point and the most prominent symptom of an affection which the practising physician meets with constantly, and for which, considering the uniformity of the symptoms composing it and the differences in the individual cases in its very often uncertain etiology, the symptomatic title of "habitual constipation" is justly maintained. We have in mind here those occlusions of the canal which are due simply and solely to the insufficiency of the forces destined to move the contents of the intestines forward, and whose ultimate paralysis leads to permanent arrest of the advance of the faeces and to the symptoms of ileus.

To produce ileus paralyticus, it is sufficient that a long portion of the intestine should be incapable of peristaltic action. The intestinal contents collect in this, and oppose an obstacle to the peristaltic action of the portion of intestine lying above it, which is greater as the paralysed piece is longer.

A further obstacle to the advance of the contents arises from the fact that the intestine lying below the paralysed portion, as is always the case below occlusions, becomes contracted (contraction of inanition), and thereby an increased opposition is made to the advance of the contents which have become consolidated into a uniform mass.

Another consequence of the paralysis is the hyperextension of the paralysed portion; the accompanying stretching and separation of the circular muscular fibres destroy the last chance of a return of the peristaltic power.

Finally, the peritoneum of the paralysed portion usually becomes sooner or later the seat of more or less inflammation, which leads to the serous infiltration of the muscular layer, and renders it incapable of contraction. Not unfrequently, also, does peritonitis play a more primary etiological part; for, starting, for example, from a stercoral ulcer of the caecum due to chronic coprostasis, it may give rise to paralysis and hyperextension of the corresponding portion of intestine and to permanent arrest of the faeces ("ileus inflammatorius" of the ancients).

An existing obstacle, for example, whether it be stricture, bending, or compression, can for a long time be compensated for by hypertrophy of the muscular coat. Finally, this compensation abates, the muscle relaxes, stagnation

follows with hyperextension, paralysis of the intestine above the obstacle, and permanent arrest of the movement of the faeces.

Circumscribed peritonitis above the occluded point is not necessary in this case to cause the paralysis, although it often does so. It is still simpler when the intestinal wall is infiltrated by a cancer which, without causing any considerable constriction, makes a portion of the intestine incapable of peristaltic action, and in this way stops the advance of the faeces.

Complete paralysis and death, with symptoms of ileus, have been observed in affections of the spinal cord.

An interesting case of this kind, in progressive ascending degeneration of the spinal cord, is recorded in the "Berichten des k. k. allg. Krankenhauses in Wien", (1865, S. 69).

Constipation with Hypochondria

From the history of such patients we learn that their trouble has usually lasted a long time, and that it gradually developed insidiously and progressively with repeated remissions and exacerbations. **A close examination often makes it plain that the mental depression appeared later, and is a secondary symptom.**

For the most of what the patients have to say with reference to the etiology bears the mark of morbid reflection upon their own condition.

Neuralgias

The complaints and troubles of the patients are most various. A sense of oppression and obstruction of respiration, palpitation of the heart, and a feeling of pressure or fullness in the abdomen, are seldom lacking, symptoms which are due to the existing meteorism (swollen abdomen) and the elevation of the diaphragm caused by it.

In addition, they often complain of faintness, ringing in the ears, rush of blood to the head, headache, abnormal sensations of heat and cold in the extremities, pains in the sacrum and back, dragging and dull pains in the genitals, and ischiatic pains, or pains in the adductor muscles.

The accompanying chronic gastric catarrh causes other troublesome symptoms:

1. Pressure
2. Fullness
3. Temporary Pains in the region of the stomach
4. Hypochondria (illness anxiety)
5. Eructations
6. Perverted Taste
7. Pyrosis (heartburn, burning sensation in the central chest)
8. Loss of Appetite

The digestive disturbances which are associated with chronic catarrh of the stomach and intestine, affect the general nutrition; the patients after a while become pale and emaciated with an unhealthy complexion and physiognomy.

It so happens that after such patients have recounted all their physical ailments, it is often necessary to ask a special question, in order to learn that the movements of the bowels are habitually delayed.

On the other hand, they talk of pains in the sacrum and back as the supposed signs of a grave affection of the spinal cord; a feeling of oppression and palpitations of the heart are supposed to point to disease of the heart or lungs, dryness and soreness in the throat to the beginning of "tracheal consumption", a tawny pale-yellow colour of the skin to a serious affection of the liver, abnormal sensations in the genitals (perhaps due to pressure of the overloaded intestines upon the spermatic veins, the genito-crural nerves, and the plexus pudendalis) to impotence, sexual exhaustion, and impending disease of the spinal cord.

A cure is often found by such patients only after they have followed the strict regime of a suitable Hydropath Establishment, or have made use of an accurately ordered dietetic and curative as well as attentive mental treatment in a rationally conducted institution.

I have seen obstinate, well-developed cases of habitual constipation with hypochondria permanently cured in this way, together with the use of cold baths for many weeks, and by taking aloes pills every evening for several months." - Dr. H. von Ziemssen, MD, Professor of Clinical Medicine, Munich, in "Cyclopaedia of the Practice of Medicine", Vol. 7, 1876.

Neurasthenia, Nerve Exhaustion

"Michael Foster, the great physiologist, in a recent address delivered before the members of the University of Cambridge, apropos to this subject of weariness, says:

"Observations and reasonings, into the details of which I can not enter now, have led physiologists to the conclusion that a muscle not only in the body but also for a measurable time out of the body, is continually undergoing change of substance; that the complex groupings of atoms, molecules and particles by virtue of which it is alive are continually being made and as continually being unmade; the living complex muscle is always being built up out of, and always breaking down again into simpler substances.

When we have excessive muscular exertion, the weariness may take a form of distress and if the effort be continued the distress may become so great as to occasion such complete exhaustion that even death may result.

In excessive work of whatever kind it may be, in order for the work to be accomplished, there is made a greater demand upon the blood for oxygen.

Difficult breathing or panting results from the changing quality of the blood. There are many things besides carbonic acid which are swept into the blood as the result of the activities of the body; in other words, the product of work in the human body is a poison, which must, needs to be eliminated through the medium of the lungs and the other excretory organs.

As the breath of man is poison to his fellow-man, so the outcome of the life of each part of the body, each tissue, be it muscle, brain or what not, is a poison to that part and its fellows, and may be a poison to yet other parts. Of each member, while it may be said that the blood is the life thereof, it may with equal truth be said that the blood is the death thereof; the blood is the channel for food but it is also a pathway for poison.

If an adequate stream of pure blood, of blood made pure by the efficient cooperation of organs of low degree, be necessary for the life of the muscle, in order that the working capital may be rapidly renewed and the harmful products rapidly washed away, equally true, perhaps even more true, is that of the brain.

As physical and mental efforts are continued, the eliminating capacity unless carefully guarded is marred, the resulting poisons are more and more heaped up in the system, poison the muscles, poison the brain, poison the heart, poison at last the blood itself, starting in the intricate machinery of the body, new poisons in addition to themselves.

The hunted hare run to death dies not because he is choked for want of breath, not because his heart stands still, its store of energy having given out, but because the poisoned blood poisons his brain, poisons his whole body.

So also the schoolboy urged by pride to go on running beyond the earliest symptoms of distress, the mere loss of wind, struggles on until the heaped up poison deadens the brain and he falls dazed and giddy as in a fit, rising again it may be, and stumbling unconscious, or half conscious only, by mere mechanical inertia of his nervous system, only to fall, once more, poisoned by poisons of his own making."

Remembering the element of poisoning, how susceptible the nervous centres are to being poisoned. Thus elimination, cleansing of all the Emunctories, should be the rule, particularly during the pregnant period, and then every possible pain should be prevented. More rapid recoveries would follow and parturition would result in less loss of nerve force.

Constipation, excessive eating, lack of exercise and absence of proper exposure to fresh air upon the part of one of the strongest, most healthy looking and most robust members of our profession, resulted in a collapse which was interpreted as neurasthenia, and treated as such, and kept under treatment for several years and the victim is not well yet, and the question may well be asked whether he ever will be.

His neurologist flattered his vanity by telling him that he had neurasthenia as the result of overwork.

Had the doctor referred to, fallen into the hands of an all-around many-sided physician, he would probably have been purged early and often for at least a week, for it would have taken that length of time however energetic his doctor might have been, to have cleared out the accumulations in that alimentary canal.

At the same time his kidneys would have been flushed with a view to the more complete removal of poisons which are eliminated through this channel.

The activity of the skin would have been encouraged, and during this time the poisoned nerve centres having unfitted him for exercise, he would have been furnished muscular exercise through the medium of massage.

I venture the opinion that he would have been rid of his leucomaine and ptomaine poisoning within a very short time, and having been placed upon proper diet and instructed to take proper exercise both in walking and horseback riding, he would have been in shape for work promptly.

Malaria, Cold and Rheumatic conditions, are often potent factors of so-called cases of Neurasthenia.

Lymphostasis

A condition of disease which has been long considered under the term of Rheumatic, to which Dr. Hans Froelich, in a paper recently presented to the profession, has given the name of Lymphostasis (Medical Mirror, January 1894).

Dr. Froelich says that with such patients there is always too rich a supply of food with too little combustion, caused by insufficient peristaltic and voluntary motion.

These circumstances, single or combined, then cause an engorgement of the concentrated lymph, which condition is first noticed in the fissures and tissue spaces, the source of the lymph system.

It will thus be seen that the Rheumatic and Gouty elements, the presence of uric acid and the deposit of fibrinous materials along the track of nerves, in other words, a Lymphostasis should be constantly kept in mind, and so too the fact that in proper regulation of Diet, Massage and Flushing of eliminative organs lies relief.

In closing, I desire to emphasize the following points:

1. The majority of cases of so-called neurasthenia are either victims of;

a) Nerve Weariness dependent upon misdirected energy without proper rest at proper intervals;

b) Nerve Poisoning, the result of constipation, improper food and accumulation of the ashes of combustion, Leucomaines and Ptomaines, a disposition to use the stomach too much and the rectum too little, and a failure to appreciate the importance of pure air as a rejuvenator of tired and poisoned nature;

c) Nerve Demoralization resulting from unrelieved peripheral irritations.

2. The best way to cure the discomforts occasioned by nerve weariness and nerve poisoning, and even those of nervous exhaustion, which are far more serious, is to prevent them; and it should be our constant desire to impress upon the families with which we come in contact the importance of building up the nerve capital of the child from the day of its birth and even before its birth, indirectly through the mother. With a view to the building up and maintainment of nerve force and guarding against nervous bankruptcy, both on the part of parents and children, we should teach them the importance of proper food, proper clothing and a properly opened condition of the animated system of sewerage.

3. We should impress them with the fact that the daily visit to the Temple of Cloaca, with satisfactory results, is quite as important as the morning and evening prayer. When we recall the fact that 90% of the women of the world are much more constipated than the traditional owl, we will realize what room there is for improvement in this direction. A special missionary work should be entered into on the part of the profession among the teachers of our schools, for they need not only to know the importance of the flushing out of the alimentary canal, so far as they themselves are concerned, but its importance as a stimulator of the wit and the ability of the young idea in the direction of shooting properly.

4. All along the line we are safe in keeping in mind the cardinal principles both as preventers and curers of the conditions mentioned, namely:

1. Elimination
2. Disinfection
3. Nutrition
4. Tranquilization
5. Oxygenation

5. Large quantities of pure water serve, as excellent stimulators of the eliminative organs.

Food that is easily digested and readily assimilated is important, are more valuable even as nerve builders than as enemies to tuberculosis, and that is saying a great deal.

Sleep is indeed “tired nature's sweet restorer,” and it represents the life of the individual.

Let us not forget that the majority of these cases, whether spurious or bonafide Neurasthenia, have usually a rotten, crowded condition of the alimentary canal, a long history of constipation leading up to leucomaine and ptomaine poisoning and that the entire system of secretory glands is deficient and perverted in activity, and that flushing out of the Emunctory System is called for.” - Dr I. N. Love, MD in “Neurasthenia”, JAMA, 1894.

The Organic Basis of Neurasthenia

A condition with symptoms of:

1. Fatigue
2. Anxiety
3. Headache
4. Heart Palpitations
5. High Blood Pressure
6. Neuralgia
7. Depressed Mood

"In medicine there has always been what might be called a scrap heap, and what Dr. George M. Parker in an article in the New York Medical Journal, for 22 October 1910, calls the "discard heap".

Into this class goes every case in which the symptoms are poorly developed or not clear of interpretation.

This scrap heap has sometimes been called malaria and sometimes rheumatism, and according to the paper by Dr. Parker, previously referred to, it seems likely that neurasthenia will be added to these two, if it does not take the place of them.

It is not necessary before this audience to enumerate the symptoms which collectively constitute the disorder known as neurasthenia. They are very familiar to us all. The cases are numerous and they are troublesome. Our object in presenting this paper is to point out that many of these cases are not cases of a purely functional neurosis, but that the neurasthenic symptoms are dependent upon organic disease in some part of the body.

The patients are insistent that the reasons for their symptoms shall be explained to them. This is difficult to do satisfactorily, particularly when the organic disturbances are not clearly and fully developed. In order to explain the reason for the symptoms which are customarily spoken of as neurasthenic, we have adopted the following scheme.

We assume that in the cerebrum there is a coordinating center which is concerned in the sifting out of sensory impressions that come to the sensorium; passing important ones up to higher centres and inhibiting those that are unimportant.

In the neurasthenic we assume that, as a result of the pathological conditions that have been operative for varying periods of time, this centre has lost its power and that, as a further result, all sensations that come to the sensorium are given the same amount of importance.

Consequently the patient is continually bothered with matters to which in a state of perfect health he would pay no attention. This disturbance of equilibrium in the sensory or psychosensory portion of the cerebum produces the painful sensations of which the neurasthenic complains, and produces the marked amount of indecision that he shows.

It appears to us that this loss of coordinating power may be due to numerous conditions.

If the circulation in the brain is impaired, as it is in arteriosclerosis, this result may be obtained and the patient be written down as a neurasthenic when his neurasthenic manifestations are distinctly dependent upon an important organic disease.

The depression of this hypothetical coordinating centre may be produced by any organic disease, by severe mental strain or shock, by overwork, and by toxic influences since 1 May 1910, we have had at The Glen Springs 51 patients who manifested neurasthenic symptoms in a greater or less degree.

We have reviewed the clinical records of these cases and, as a result, we offer the following data: 19 of these patients upon physical examination presented evidences of disease of the cardiovascular system.

In 4 of these the condition was characterized by an increased area of cardiac dullness, deficient muscular quality of the systolic sound, urine usually large in quantity, low in specific gravity, and without casts, and a normal or low blood pressure, 130 mm., 146mm., 116mm., and 122 mm. These cases we believe to be due to myocarditis which has so acted upon the patient as to alter the circulation in the cerebrum and to produce the neurasthenic symptoms. In 1 case there was a markedly deficient muscular quality of the systolic sound of the heart and some evidence of arteriosclerosis.

In 10 cases the patients showed evidences, upon physical examination, of beginning or well advanced arteriosclerosis, as indicated by high blood pressure, 174 mm., 170 mm., 160 mm., 170 mm., 230 mm., 200 mm., 185 mm., 165 mm. and 160 mm., accompanied by a deficient muscular quality of the systolic sound in 6 and by no apparent change in the muscular quality of the systolic sound in 4.

These patients usually present a rapid pulse. They usually pass a large amount of urine of low specific gravity, usually without albumin and without casts. In 4 cases a diagnosis of beginning interstitial nephritis was made on account of the high blood pressure, some alteration in the muscular character of the systolic sound of the heart, and the passage of a large quantity of urine of low specific gravity with the irregular occurrence of albumin or casts. In these patients the peripheral vessels were usually thickened. It seems to us that the disturbances of circulation in the cerebrum due to the advancement of arteriosclerotic changes, may very readily account for the neurasthenic symptoms complained of.

The following is a typical instance of neurasthenia dependent upon arteriosclerosis:

Case I. The patient was a male, aged 59 years, whose chief complaint was insomnia, with a fear that he would lose his mind or become a confirmed invalid.

He had eaten too much and in too large quantities. The neurasthenia was of 2 years duration and began with sensations of discomfort in his stomach in the morning.

He had lost some flesh and, after having had a stomach tube passed and his gastric contents examined, he was told that he had an ulcer of the stomach.

This frightened him and he began to worry and had continued to worry about bis condition. About 2 months after that the patient had an attack of retention of urine so that he required catheterization 3 times a day for nearly 3 months. At the end of that period, September, 1908. the patient had a portion of his prostate gland removed. In March, 1909, he had a suprapubic operation for the removal of the remainder of the prostate gland, since which, physically, he had been fairly well.

The physical examination showed the following important points: Arcus senilis in both eyes, more marked in the upper half of the sclerocorneal junction.

Puffiness below the lower eyelids. Coated tongue. Slight amount of pulmonary emphysema, indicated by superresonant percussion note all over the chest.

Myocardial change, indicated by a deficient muscular quality of the systolic sound of the heart and accentuated diastolic sounds, without murmurs. There was a fine tremor in both hands. Blood pressure, recumbent, systolic, 170; diastolic. 128: mean, 149. The urine showed a total quantity of 2650 ml; specific gravity, 1.010; no albumin, no glucose, a few hyaline casts, bladder epithelium and calcium oxalate crystals. Casts were found in this urine but once, on the first examination.

We interpret this case as one in which the arteriosclerotic processes had advanced to such a point that when the information was given him that he had an ulcer of the stomach, he magnified the importance of the information from inability to judge correctly, 9 of the cases were dependent upon some disease in the gastrointestinal tract.

Of these 3 appear to be due to cholecystitis, as indicated by yellowing of the conjunctivae, enlargement of the area of liver dullness, tenderness on pressure in the region of the gallbladder, attacks of constipation, sometimes alternating with diarrhoea, and frequently accompanied by large quantities of mucus in the stools.

Case III. A typical case was presented by a woman, aged 49 years, who had been under the care of many physicians for several years for various neuroses. At one time a diagnosis of erythromelalgia and angeioneurotic oedema was made. The chief complaint that this patient made was of pain in the back, in the back of the head, in the right arm, and in the right hypochondriac region. The previous history showed that the patient had had an attack of typhoid fever 30 years before she was seen. She noticed that her hands began to swell and were painful, and that the pain would extend up the right arm to the shoulder. The patient was profoundly neurasthenic in her actions. Examination led us to believe that the pains of which she complained were functional, because on making pressure over a painful area the patient would wince violently when the hand was first applied to the skin, but upon holding the hand on the skin, making pressure in another part with the other hand until the patient winced again, and then making harder pressure with the first hand applied, no evidence of pain was elicited. A physical examination showed that the conjunctivas were markedly injected, that the heart

was slightly hypertrophied, was without murmurs, presented markedly accentuated diastolic sounds, and a fair muscular quality of the systolic sound.

The blood pressure was high, 158 mm.

There was an area of tenderness in the appendix region and the liver, the dullness of which extended from the 5th rib to the seventh interspace, was distinctly palpable and quite tender.

At the time of the first examination the following note was made: "It feels as though there might be an enlarged gallbladder."

Various kinds of treatment supposed to be accompanied by benefit in cases of neurasthenia were tried with very little result.

After over 3 months of treatment of this kind with fairly frequent physical examinations, which always gave the same result, an examination made showed practically the same conditions as already described except that the cardiac condition was improved.

The point of maximum impulse was found in the 5th interspace inside the mid-clavicular line.

The dullness extended from the 3rd rib to the 5th interspace, and from the midsternal line to just inside the mid-clavicular line.

There were no murmurs. Both diastolic sounds were accentuated, and the muscular quality of the systolic sound was good. The liver dullness extended from the 6th rib to the 8th rib and the edge of the organ was distinctly palpable and tender. There was some tenderness in the appendix region. In addition, a distinct sensation of tumour was outlined in the midline, low down.

This sensation was not definite enough to be positive about, and was not extensive enough to give a dull note on percussion. The opinion was given, however, that in all probability a uterine fibroid was present. At this time the patient's systolic blood pressure was 155 mm., her pulse was 84, regular but very small and weak; the artery was not palpable.

In consultation with her family physician, the patient was advised to consult Dr. George R. Crile, at the Lakeside Hospital in Cleveland.

Dr Crile operated upon her and found a very much distended gallbladder, which was filled with a large number of very small stones in the midst of which three larger stones were embedded. He removed the gallbladder, and he also removed a distended appendix, which was filled with concretions, and the body of the uterus, which presented one large and several smaller fibroid tumors.

It is too soon to give an opinion as to the result of this operation, but already the patient's blood pressure has come down from 155 mm. to 130 mm., the cutaneous hyperaesthesia has disappeared. The patient, who was formerly chronically constipated, now has bowel movements without the use of a cathartic, and her neurasthenic symptoms are very much better than they ever have been before.

We interpret this case as one in which toxic absorption from an infected gallbladder, perhaps also from an appendix without proper drainage, so affected the cerebral functions as to place this patient in the neurasthenic class. In 1 of the gastrointestinal cases, appendicitis appeared to be the etiological factor.

The patient, however, had not been operated upon and the opinion of the existence of appendicitis was made merely from the symptoms.

In 4 of the gastrointestinal cases, the symptoms appeared to depend upon very marked constipation. In 1 case the constipation followed an unusually difficult labour. In 1 case Rigg's disease was discovered upon making the physical examination, 4 cases appeared to follow operations, 1 patient, a single woman, had had a total hysterectomy, and upon recovery from the operation she had symptoms of mucous colitis.

In another case the patient had had an Alexander's operation in 1904, a cholelithotomy in 1908, and a celiotomy (laparotomy) for the removal of the left ovary and tube, and the appendix in 1910. This patient had very marked abdominal pain and a weak myocardium. In another case the neurasthenia appeared to follow appendectomy, and in still another the symptoms followed operation for empyema (a collection or gathering of pus) of the maxillary sinus.

In one case a lateral curvature of the spine was discovered, and in another case the existence of syphilitic infection appeared to be the cause of the neurasthenic symptoms. Four cases were dependent upon overwork, in one of which there was the added disturbance caused by the death of a child.

Three cases were dependent upon nervous shock. One of these patients had been through an earthquake, a fire which destroyed her home from which she had to rescue her children, and a street car accident. In 7 of the cases of neurasthenia no organic disease could be determined. One of the patients showed a very faint trace of albumin but had none of the constitutional symptoms of disease of the kidney.

Another patient had a slight amount of chloroanaemia and passed a large quantity of urine of low specific gravity.

A 3rd patient passed a large quantity of urine of low specific gravity, and complained of constipation and intestinal gas.

The 4th patient showed a low blood pressure. The 5th patient was somewhat overweight. This patient had a slight chloroanfemia and some alcoholic tendencies. She was also engaged in an occupation that required considerable exercise of the emotions.

In the seventh patient the neurasthenic symptoms were of several years duration and were apparently dependent upon overwork.

An examination of the case records from a somewhat different point of view shows that 29 of the patients suffered from more or less marked constipation, and 19 from more or less marked gastric disturbances.

We wish to point out the possibility of toxic absorption from the stomach and intestine as being sufficient in many cases so to upset the cerebral equilibrium that symptoms of neurasthenia may arise.

In such cases the removal of the gastrointestinal disturbances should be followed by improvement, if not by cure, of the neurasthenia.

Summary

19 cases due to Cardiovascular Disease; 4 myocarditis with low blood pressure, 1 myocarditis with arteriosclerosis, 10 arteriosclerosis with high blood pressure, 4 beginning interstitial nephritis.

3 cases due to Pulmonary Disease.

9 cases due to Gastrointestinal Disease; 3 cholecystitis, 1 appendicitis, 4 very marked constipation, 1 pyorrhoea alveolaris.

4 cases Postoperative.

1 case due to Scoliosis.

1 case due to Syphilis.

4 cases due to Overwork.

3 cases due to Nervous Shock.

7 cases Undetermined.

Total 51

37 cases dependent upon organic disease, 72.5%

14 cases apparently independent of organic disease, 27.45%.

In conclusion

We wish to emphasize the necessity for adopting the well tried methods of examination that serve so well in plainly developed chronic disease as a routine measure m neurasthenics.

Many times one will discover underlying organic changes responsible for the disturbance in the nervous equilibrium.

The relief of the former ought to be followed by relief of the latter.

Such cases should, we believe, not be called neurasthenic; they should be called cardiac, arteriosclerotic, nephritic, toxic, etc." - Dr John M. Swan, MD, Dr Charles Clyde Sutter, MD, in "New York Medical Journal", 21 January 1911.

Chapter 38

Neural-Arc Reflex

"A compendium of the science of spinal concussion and sinusoidalization and the technique of their administration; the specific centres of nerve origin through which we control the function of various viscera; the results of stimulation of the different spinal centres of nerve origin, what affected and how, and directions for the correct application of those methods in the treatment of diseases amenable to them." - Dr Alva Emery Gregory, MD in "Spondylotherapy Simplified", 1922.

The Conservative Value of Right Posture

"When physicians are encouraged to act not merely as repairers, but as conservators of health, results will follow commensurate with their powers.

Every person can be improved by wise direction and control.

The proposition here to be presented is the conservative value of right posture; to show also how largely this factor underlies and conditions all health problems.

There is ample evidence throughout scientific records to warrant the opinion that a most important key to continued health, to the enhancement of efficiency, lies in attaining right posture and maintaining elasticity of all structures concerned in motion.

The body is frequently compared to a machine, of exceptional delicacy and efficiency. Far above the resources of a machine the body possesses powers for growth, development, repair and adjustment; it is also capable of modifications by environment, favourable or unfavourable, tempting the possessor to rely upon these resources and omit exercising that care and watchfulness which would instinctively be bestowed upon an engine or a domestic animal.

In consequence of this deplorable indifference to our largest obtainable asset, the body is perpetually falling into disrepair and derangement, physicians being utilized mainly to afford repairs and but little more.

The first and most obvious principle in conserving the efficiency of an engine is to make sure that all the parts are so adjusted as to secure the nicest, most exact and economic action; next, so to direct the moving forces that the parts shall be and remain in best adjustment. Then follow the manifold and diverse factors concerned in achieving the best possible development of inherent capabilities.

The normal human body is a marvel of compactness and economical adjustments.

Structural symmetry contributes much to maintenance of efficiency, even to prolonging life.

As a man or woman grows old, defects of bodily carriage and poise are deplored from an esthetic standpoint.

Deformities caused by posture and costume impair health in many directions. Physical peculiarities, present in all to varying degrees, are too often regarded as mere matters of course, distinguishing characteristics, and dismissed as of no moment. A conspicuous stoop, a lateral twist, a sagging waist, high shoulders or hollow chest, bent knees and such-like asymmetries, are looked upon as merely questions of bad taste, or as the fingermarks of fate. They are often deliberately perpetuated, even exaggerated in portraits and frequently imitated. A grave significance is evidenced when it is realized that these departures from normal attitudes attest exaggerations of developmental faults, inducing degenerative changes in nerve centers or conduction paths; of a morbid slackness in tissues, of central defects, impaired nutrition in important structures, of compression of blood vessels and nerves, all tending to produce yet worse states in vital organs.

Too often it is wrongly assumed that such degenerative alterations merely foreshadow advancing age and are inevitable. Changes in shape and symmetry not seldom begin in early childhood and are often obvious in adolescents or young adults, inducing much the same deformities as in older folk.

Nevertheless, among some fortunate persons of great age they are practically absent. These exceptional individuals are usually possessed of marked vigour or stamina.

If these persons had possessed full accurate command of their motor machinery and been trained to act in accordance with best standards, they would have become vastly better animals.

To make plain why faulty postures should be productive of hurtful conditions it is necessary to recall that the machinery of organic life is dependent for fullest efficiency upon normal relationships of component parts one to another.

A moderate familiarity with the outlines of physiology will make it plain that one set of tissues should bear normal and exact relationships to others.

It is difficult to realize how the human organism can continue to live and enjoy even moderate vigour if the divinely ordered mechanisms are thrown markedly out of adjustment, mechanically or chemically, even more so if structurally changed by compression leading to disease.

Yet the power of human endurance and recuperation is incalculable.

Let me cite a few illustrative instances to show the hurtfulness of faulty posture.

The attitude of children in schools is receiving a late but well merited attention nowadays. The position of the chair and desk, if correct, saves the organs of sense, such as the eye. **If it be faulty the eye is caused to suffer rapid changes, many of which become irreparable.**

The damage lies not so much in the mere nearness, remoteness or angle of the object seen, the character of the text, the position of the light, etc., but organic integrity is influenced even more by the cramped position of the little bodies causing interferences in the blood supply to the eye by long maintained irregular

pressures on the blood vessels and nerves, thus altering the nutrition of this most delicate organ and interfering with not only function but full development.

It should be recognized that long maintained sitting at desk, even in the most correct postures obtainable, produces much damage in growing structures, the thorax, the bones and ligaments, the back and limbs. Following upon this is a series of changes in the circulatory organs by which the brain and governing centers are injured more or less.

The fact is well established that children put at school early and compelled to do work in advance of their years fail to acquire so complete a mental development as those who begin their studies later, when better equipped structurally by specialization through spontaneous activities and unhindered observation and adaptation. Take a casual view of a lot of school children who have not been taught or encouraged in a good system of free exercises and it will be patent that already they have begun to acquire posture deformities.

A straight back is a good index of physical efficiency

Other things being equal, the straight, well set up back is to be found in those subjected to careful training in wholesome, symmetrical activities. In proportion as persons habitually maintain this attitude do they retain their vigor, elasticity, and correct poise.

Next to straightness of the back it is desirable to preserve elasticity and tone in trunk muscles and ligaments. Next in importance is the (nearly) horizontal position of the pelvis. Next the carriage of the neck and the superimposed head. The whole, in brief, constitutes the normal well poised attitude essential to health, vigour and full activity. Let us examine into the effects produced, or rather maintained, by a nearly straight back.

If the backbone is nearly vertical the ribs must become more or less horizontal; hence they open up fan like, and the thorax is thus made more capacious.

This can be demonstrated by anyone standing back to a wall and striving to obliterate the lumbar and cervical curves, i.e., to flatten the back.

These significant facts and principles were pointed out to me 25 years ago by a physical trainer, Edwin Checkly, and so far as I know their true value was first emphasized by him. I have taught them ever since. It is unnecessary here to dilate upon the significance of educational measures which increase mobility and amplitude in the thorax, that chamber in which the heart and lungs are contained.

By obliterating as nearly as possible the lumbar curve the pelvis becomes almost level. The values of this are manifold. The abdominal viscera are better held in place, the strain upon the encompassing muscular wall is less and the great organs are held more firmly in their normal inter-relationships. When the pelvis tilts downward in front the position of the great trochanters (thigh-bones) is altered and their action cramped. In the act of walking, if this level is maintained, as the body leans to one side to raise the opposite leg it will readily swing free of the ground and fall naturally and easily into its next position for advance.

As the body then leans to the other side the opposite leg will again swing forward with no effort, and thus plantigrade progression becomes an easy action and one can walk on and on with small fatigue almost indefinitely.

Thus does correct posture contribute to speed,, endurance, to nimbleness and accuracy of "leg work." It is not possible to secure and maintain the normal erect posture and the manifold modifications inevitable in active life unless the skeletal structures be, and remain, normally elastic. I advanced these views and set forth the arguments long ago (1904) in an article in Popular Science Monthly on, "The Conservation of Energy in Those of Advancing Years."

The distinguished English physician, Sir Herman Weber, an authority on the subject, wrote me that he was of the opinion that I had touched upon the one vital principle, i.e., **the paramount value of elasticity of structure in preserving youthful activities."** - Dr John Madison Taylor, AB, MD in "Journal of Advanced Therapeutics", March 1911.

The Relation of the Central Nervous System to the Alimentary Canal

"The spinal cord and brain of vertebrata have been evolved from what was originally a section of the alimentary canal.

In other words, the central nervous system is a modified piece of bowel.

1. The original continuity of the lumen of the gut and spinal cord.

2. The similarity in their mode of development and correspondence in point of time.

3. The relation of the lateral ganglia (sympathetic) to the walls of the gut and its intrinsic ganglia and to the ganglia (grey matter) of the cord respectively.

4. Each tube, the nervous and digestive, is protected by a serous membrane, in the one case the arachnoid, in the other, the pleuroperitoneal membrane.

5. In lower vertebrate forms the spinal cord is relatively larger than in man: in batrachians it much exceeds the brain in weight.

6. The association of certain malformations of the central canal of the spinal cord, especially syringo-myelocele and syringo-meningomyelocele, with malformations of the alimentary canal." - Dr J. Bland Sutton, FRCS in "Brain, A Journal of Neurology", Vol.10, 1888.

The relation of Malformation of Body Segments to Visceral Diseases

"The object of studying these necropsies has been to determine the relationships between malformation of the body segments and visceral diseases.

Fifty (50) cadavers were examined at autopsies. Notes were taken:

1st of the gross pathology of the internal organs,

2nd of the curvatures and malformations of the vertebrae,

3rd of the sympathetic nerve connections between the malformed spinal

segments and the diseased viscera.

The visceral affections were grouped in the order of their sympathetic connections from above downwards, the vertebral curves were similarly arranged, as were the sympathetic nerve connections between the spinal cord segments and those viscera found diseased in the 50 bodies examined.

The vertebrae were then boiled and scraped, the individual vertebrae composing the curves were examined for deformities, and mounted on rubber hose passed thru the spinal canal. In this manner the normal and abnormal curves were reproduced. (1) The relation between vertebral curves and malformed vertebrae could then be carefully studied.

Malformation of Body Segments and Visceral Disease

Histories of twelve patients and death certificates for nearly all the bodies were kindly furnished by the Pennsylvania Anatomical State Board and the institutions from which they came.

Of 197 curves of the spine in 49 cadavers, there were three of gross scoliosis, one of Pott's disease, one with fracture-dislocation, leaving 192 minor curves, of which the following table is composed: 192 Minor Curves

Rotations of single vertebrae 21
Double curves 2
Triple curves 21
Quadruple curves 11
Quintuple 9
Six or more curves to a body.....8
Too straight (spine straight where curve is normal)..... 4
Pelvic rotation, with rotated sacrum..... 15
Sacro-iliac subluxation? (with elevation of one pubic bone)(2)...? 2
Spina bifida, occulta, with minor curve.....4
Sacralisation of last lumbar vertebra.....2
Six lumbar vertebrae Instead of five.....1
Sacral vertebrae separate, ununited to each other..... 1
Total 101

Curves composed of one rotated vertebra only (above) 21
Curves composed of two rotated vertebrae.....30
Curves of three rotated vertebra.....56
Curves of several vertebra.....62
Diminution of intervertebral foramen (spondylitis) with visceral disease...3
Diminution of foramen without visceral disease.....3
Rheumatoid arthritis of rib head with visceral disease.....12
Rheumatoid arthritis of rib head, no visceral disease.....1

Spicule pressing on dura, with visceral disease.....2
Spicule in canal without segmental organic disease ….....0
Intervertebral disc disease with segmental organic disease.....15
Disc disease with no disease of organ of same segment.....3
Spondylitic scoliosis with segmental organic disease.....70
Spondylitic scoliosis without segmental organic disease.....12
Minor curves with disease of viscus of same segment.....165
Minor curve without affection of organ of same segment..... 50
(4)(The numbers do not tally because of curves within curves).

Notes:

1. By closely approximating the vertebra on the rubber hose the curves were reproduced even tho the intervertebral discs were absent.

2. Sacro-iliac subluxation is really a rotation of the Innominate on the sacrum; therefore, unless the pubic is completely dislocated at the long end of the lever, there is no sacro-iliac subluxation at the short arm of the lever, the axis of rotation passing thru both sacro-iliac joints.

3 & 4. The totals cannot be made to tally because grosser curves were found to be composed of 2 or more minor curves in many Instances, so "curves within curves" break up a summation of curve numbers.

Visceral Affections Found Associated With Minor Curves of Vertebral Segments Belonging to the Same Sympathetic Segments as the Affected Organs, Taken in Order From Above Downward

4 Brain, softening 3; combined with longitudinal sinus thrombosis 1.
3 Thyroid enlarged.
2 Thymus enlarged fatty and fibrous.
38 Pleural affections: adhesions 31; effusion 5; empyema 2.
36 Lung affections: pneumonia 15; congestion 13; tuberculosis 9; abscess 1.
25 Heart affections: endocarditis 11; dilatation 10; hypertrophy 4; pericardial effusion 1; pericardial adhesion 1.
6 Stomach affections: dilatation 6; ulcer 1.
14 Liver affections: atrophic cirrhosis 7; enlarged 5; cancer 1; congested 1.
7 Gall-bladder affections: gall-stones in 7 cases.
1 Duodenum: ulcer 1.
2 Pancreatic affections: cirrhosis 1; sclerotic and cystic 1.
16 Splenic affections: large 8; small 4; cystic 2 (subcapsular); cyst 2.
4 Splanchnoptosis, partial 4.
5 Appendicitis: chronic 3; acute 1 (abscess 1 with peritonitis 1).
2 Peritoneal affections: ascites 1; peritonitis from appendix 1.
23 Kidney affections: parenchymatous nephritis 12; chronic interstitial 5; hypertrophy 2; atrophy 3; congenital cystic bilateral 2; small cysts 2; gravel 1; stone 1.

1 Cecal disease, chronic colitis and adherent feces 1.
2 Colonic affections: chronic colitis 1; dilated with feces 1.
2 Sigmoid disorders: cancer 1; distended with feces 1.
4 Rectal disorders, crypts, papillae, fecal impaction and ulcer, 1 each.
11 Prostatic affections: large 11.
12 Bladder disorders: dilated 9; cystitis 2; gravel 1.
3 Uterine affections: fibroid 1; polyp 1; retroverted 1.
1 Aneurysm of arch and descending aorta 1.

Total 214

Rheumatoid Arthritis of Ribs

Rheumatoid arthritis of the costo-vertebral articulations was observed at the site of 18 spondylitis scoliotic vertebral articulations. Seventeen of these were accompanied by visceral diseases, these viscera belonging to the same sympathetic nerve segments as the affected joints. There were 3 ribs with rheumatoid arthritis at both the sternal and costal extremities of one side, without deformity of the shaft of these ribs. The intercostal arteries from the aorta inosculate with those from the internal mammary at about mid-axilla, the veins and lymphatics course from midaxilla to the anterior and posterior portions of the chest. The only way the disease could have been directly communicated was by the intercostal nerve, the blood and lymph channels not coursing in this direction.

Jones and Kelly, "Arthritis Deformans," etc., pp. 19 and 117, state "Pitres and Vaillard found neuritis in the peripheral nerve fibers in cases of rheumatoid arthritis," while "Painter, McCrae, Macalister and Tessie came to the conclusion that rheumatoid arthritis was a toxic neurosis of vasomotor transmission."

Subluxations of Vertebra

Several subluxations of vertebrae were observed, always, however, in association with ankyloses of the affected vertebrae. It appears that absence, following atrophy of the disc, produces approximation of the vertebral bodies, this in turn causes the articular facets to glide on each other, thus producing subluxations.(5) Whether hypertrophy of the discs could produce a subluxation by wedging apart the articular facets has not been determined. Sometimes the reverse sequence occurs; there may be visceral diseases which are followed by spondylitis deformans, and curves of the spine may result. In these instances it is difficult to prove that no minor curve existed before spondylitis developed. There is a curve in the upper dorsal region which becomes rigid from spondylitis and accompanies old age. It is difficult to determine the primary-factor. Usually the curve is primary, spondylitis secondary and arteriosclerosis and old age follow. Careful examination both before and after death shows that spondylitis precedes arthritis of the extremities. However, hallux valgus, with arthritis is perhaps the earliest and comes from wearing pointed shoes.

(5)Personal communication by Dr. Roux, of the Jefferson Hospital, was convincing that the subluxations were secondary to the spondylitis and not the cause of spondylitis.

Intervertebral Disc Disease

Considerable hypertrophy of the front and sides of discs was observed in a number of instances in which the hypertrophy of the vertebrae was slight. It would thus appear that disc disease is primary to hypertrophy of vertebrae. The hypertrophy of the disc sometimes exaggerates curves which already existed or modifies the preexisting curves. Whether disc disease causes curvatures or not has not been determined. Rheumatoid arthritis was diagnosed in 18 or more intervertebral discs in abnormal curves, 15 showed affections of the viscera belonging to the same sympathetic myelomeres as the diseased discs. Tho the discs may be of some importance in causing curves as shown by Lovett (6), nevertheless after a curve is once established, fixed, the change in shape of the vertebrae composing such curves is in itself sufficient to cause persistence of curve. This was proven in many instances, 40 in fact by mounting the vertebrae on rubber hose, passed thru the vertebral canal, thus re-establishing all the normal and abnormal curves found on the forty cadavers so treated.

(6) Lovett, "Lateral Curvature of the Spine and Round Shoulders," pp. 10, 11 and 88. Edition 3.

Conclusions

Diseased viscera at necropsy are found to be associated with curvature of the spine in over 90%, of cases. Most if not all of these curves include a malformation of the entire segment involved. This malformation begins in the early embryos and includes the vertebral column, spinal cord, ribs, muscles, blood-vessels, nerves and the viscera belonging to the segment. Of course in the earliest embryos it involves the rudimentary structures which later become recognized as adult structures. (7) In the adult they are expressed as minor curves of the vertebral column, but cross sections still show the bilateral asymmetry. They are probably the variations of Wallace. (8) They might be regarded as a disease, perhaps the earliest of all diseases, the resistance to later diseases being diminished in the malformed segments. They localize disease in many instances to the malformed parts. They predispose to disease of the malformed segments. The cord malformations are to be found in photomicrographs of diseased spinal cords. (9) They are probably considered by the pathologist to be due to warping of the tissues in fixation, or to cutting the sections obliquely. However, had the pathologist carefully examined the spinal column he would undoubtedly have found a fixed curve with malformation of vertebrae, etc. The same bilateral asymmetry alternating up and down the vertebral column and ribs is found in adults, infants and embryos alike.

(7) J. W. Ballantyne, "Antenatal Pathology," Van San Rat Edmund Falk, "Die ange- borenwirbelsaulenverkrummenegen" Carrl Ni- coladonni "Zusammenhang swichen Ischia und Scoliosa," p. 7, showing that scoliosis alters the shape of the spinal cord.

(8) See also H. Heidin, "Ueber Heterotopien in Rueckenmark," Arbei Path. Inst. Vienna 1 Reih. 1 Bd. 94-95 Eug & Bouvard (geneve) "Remarq. du Modelag. Embryons humain. Anat. und Entw. von Prof. Wilh. Roux. Ely Leblanc Hypertrophie Congenitale, Du Role de la Meta- mere embryonaire dans son evolution patho- loglque.

(9) C. Darwin, "Origin of Species," pp. 189, 195, 184, quoting Isadore Jeffroy Saint-Hilaire, also the former "Darwin," p. 184, in his "Origin of Species," C.H. Flagg, "Path, of Evolut.," p. 44, N.Y.M.R, 8, 25, '97, p. 450; see also Jeliffe and White, "Diseases of the Nervous System," as quoted in article No. 2.

Treatment

There is no good reason why the orthopedic surgeon should not attempt to improve these malformations, he can never cure them. Great gentleness is required with children. In adults it is usually too late. Spondylitis deformans should receive gentle massage. However, the Spondylotherapy and Reflexotherapy, of Albert Abrams of "Spondylotherapy" fame, Diathermia, Heliotherapy, Chromotherapy and heat should certainly be tried, together with diet." - Dr J. Madison Taylor, MD, Dr Henry Winsor, MD, in "American Medicine", November 1922.

"A compendium of the science of spinal concussion and sinusoidalization and the technique of their administration; the specific centers of nerve origin through which we control the function of various viscera; the results of stimulation of the different spinal centers of nerve origin, what affected and how, and directions for the correct application of those methods in the treatment of diseases amenable to them." - Dr Alva Emery Gregory, MD in "Spondylotherapy Simplified", 1922.

Hydropathy

"**Hydropathy is in my opinion the sheet anchor not only in preventing the development of pneumonia but also in determining that these pneumonias will not prove fatal.** By a skilful application, pulmonary venous congestion which is about to take place may be overcome by producing an active hyperemia.

The more rapid and free circulation thus established through the diseased area produces a local increase in leukocytes and absorption of exudate.

There is an underlying principle in Hydropathy which governs the external area to be treated for a definite internal effect, certain skin areas being reflexly associated with certain internal viscera.

The circulatory effect produced in these skin areas is analogous to the effect at the same time produced in the associated viscera.

The chief associated skin areas for lung treatment extend over the entire chest surface, thus, we make our application to this entire region." - Dr Edward Thomas Secor, MD in "The American Journal of Clinical Medicine", 1919.

Relation of Rectal Disturbances to other Pelvic Disease

"The symptomatology of affections of the rectum frequently gives the false idea that the lesions have their origin in other pelvic viscera. This impression leads to a wrong diagnosis, and patients undergo futile operations because of such mistakes.

All of the pelvic organs are united in one grand nerve plexus and an irritation arising from any source may be reflected so as to appear to originate in another.

The etiology of every symptom must be carefully investigated and all of the pelvic organs, together with most of the abdominal organs, are to be examined in every patient who complains of rectal disturbance.

Unless such an extended and painstaking examination is made, treatment will be directed exclusively to the rectal pathology and prove futile. In some instances of disease elsewhere the symptoms are referred to the rectum, although no pathological rectal condition is found.

On other occasions symptoms of definite pathological rectal conditions will be found due to extrarectal causes.

Extrarectal disturbances may incite rectal expression by:

1. Pressure of some other pelvic organ upon the rectum;
2. Lymphatic extension of chronic inflammations from the various pelvic viscera;
3, indirect pressure through the blood column, as in cardiac, hepatic or splenic disease;
4. Continued coughing due to respiratory or cardiac disease;
5. Undue straining due to urethral stricture, vesical calculus and cystitis;
6. Reflex nervous symptoms.

Although the primary pathological condition may be extrarectal, positive disturbances within the rectum may occur, as for example proctitis, ulcerations, haemorrhoids, fistula, and fibrous stricture.

No pathological condition of the rectum can be considered properly diagnosed unless its etiology has been determined.

Constipation coming on in adult life always warrants diligent investigation, as it is frequently due to extrarectal causes.

A given causative factor may produce entirely different symptoms in different patients.

Reflex Nervous Disturbances

The female reproductive organs are particularly prone to reflex disturbances due to rectal pain. The close anatomical and physiological relation of the bladder and rectum often give rise to disturbed function in either organ, probably by way of short circuit spinal impulses.

The operation for hemorrhoids is frequently followed by retention of urine and again the congestion due to dysmenorrhea, or the tension of a prolapsed ovary or uterine inflammation, may cause proctitis, spasmodic anal sphincters, and cystitis.

Ulceration of the rectum and even constipation may cause irregularities or a suppression of menstruation.

In many women diarrhoea is often an annoyance during the menstrual period while in others obstipation is common. Some patients who suffer from chronic constipation between their periods have regular bowel evacuations or even diarrhea during menstruation. An obstinate diarrhoea without colic or mucus discharge sometimes signalizes the beginning of the menopause.

In other patients obstipation with a tendency to gas formation occurs at the climacteric and is resistant to the usual course of treatment.

Wagner in two such cases had good results with ovarian therapy. An ulcer of the rectum, fissure in ano, stricture or cryptitis will often cause reflex spasm of the levator ani and sphincters of the anus and vagina, thus producing a local neuralgia, or in other instances widespread reflexes cause ovarian or uterine pains which closely simulate disease of these organs.

Such patients are not relieved by treatment directed to the generative organs but are promptly cured when the rectal disturbance is attended to.

On the other hand rectal pain and tenesmus may be due to cystitis, vulvovaginitis, displacements and adhesions of the uterus or appendages.

Parametritis may cause stricture of the perirectal tissue. Pain referred to the rectum may be due to strain of the iliosacral synchondrosis.

Parturition may be much protracted by a foreign body or faecal impaction of the pelvic bowel. Hypertrophy of the levator ani muscle and sphincteric tenesmus should be carefully watched for and relieved during the end of pregnancy, as these conditions prevent full relaxation of the perineum.

Autointoxication from colonic stasis may also give rise to mental and nervous disorders.

These conditions so interfere with the peristalsis of the sigmoid and rectum, with its blood supply or nervous equilibrium as to cause constant suffering.

While any one of the above mentioned conditions may cause the patient's suffering the possibility of several factors combining in one patient must always be thought of. A cure of either one cause is not likely to relieve the pain and suffering due to the other disturbance." - Dr Charles J. Drueck, MD, Chicago, Associate Professor at Rectal Surgery. Post Graduate Medical School. Rectal Surgeon to Peoples Hospital, in "New York Medical Journal", 24 April 1920.

Chronic Infections of the Large Bowel Including the Sigmoid and Rectum

"Editor's Note: While almost all other portions of the body have been studied in the newer light of focal infections, the profession at large is still inclined to neglect the large bowel, including the sigmoid and rectum, as points of predilection for tubercular, amoebic, and bacterial infection.

Dr. Beach enters into a detailed consideration of such infections, their pathology, bacteriology, symptomatology and treatment, with the authoritative assurance of one who speaks from a broad experience.

When it is realized that:

1. Gastric Disturbances
2. Headache
3. Gall Bladder Infection
4. Myalgias
5. Leukemias
6. Arthritides
7. Various Neuroses, including Asthma and Epileptiform Seizures

May result from Spastic Constipation.

It is time to take Colon Infections seriously."

"Who can estimate the digestive influence of the colon upon the vital functions of the body? What of the discomfiture caused by a distended colon upon other physiologic processes, or the insidious effect of toxines absorbed by this important organ?

How explain the source of copious mucuous discharges, or the effect of bacterial life of varied strains of intestinal flora constantly resident there?

And finally, how can one dare enumerate the wide range of reflexes which originate in this portion of the intestinal tract?

A Consideration of Colonic and Rectal Infections

When we contemplate the possible relationships of colonic fluctuations to disease in other parts of the organism, the subject looms large for a single discussion, so we must be content with recording a few high points in our consideration of colonic and rectal infections.

The points of predilection for the habitat of infection are:

1. The Caecum and Ascending Colon
2. The Sigmoid Flexure
3. The Anal Rectum

Anatomically, the caecum has the largest capacity, being 3 inches in diameter; the sigmoid from 1 to 2 inches, while the rectum about equals the diameter of the caecum. In this connection I wish to speak briefly of the capacity of the colon for fluids and the rapidity with which the enema reaches the caecum.

Radiographers have proven the futility of passing a long colon tube to the caecum, holding that it cannot pass beyond the sigmoid loop because of recoiling on itself, while the simple enema by an ordinary syringe tip is sufficient, and that solutions will travel to the caecum in 12 minutes.

I have tested this also by pouring a suspended mixture through a 6 inch proctoscope, the patient being in the inverted position, the fluid appearing at the caecum in a few minutes or as soon as the intra-abdominal pressure is equalized on the column of fluid. On this hydraulic principle I have repeatedly passed through the proctoscope solution of Epsom Salts in my routine treatment of Constipation.

Tubercular Infection

Tubercular ulceration of the large bowel is more common in the upper chambers and less common in the lower sigmoid and rectum than is commonly supposed. This process is very destructive and uniformally fatal. I have seen the entire colon, from the caecum to and including the upper sigmoid, nearly destroyed. Tubercular ulceration of the colon results in emaciation of the patient due to frequent alvine discharges (intestine evacuations), and yet it must not be forgotten that any type of ulceration will produce the same symptoms and lead us to believe the lesion to be tubercular.

The persistence of these symptoms and progress of the invasion in spite of treatment will differentiate the tubercular from all other forms of infection.

Again, we believe that the theory of tubercular infection of the anal rectum is far less frequent than is supposed, and the idea that all or most cases of ischio-rectal abscess is a precursor of general tuberculosis is erroneous.

Diagnosis of the tubercular sinus is rather clear when you observe the bluish tinge, the gaping sinus, the strumous discharge, patulous anus, retracted perineaum and loss of fossal fat.

The tubercular sinus is difficult to cure, but that is no reason against surgical efforts to eradicate because it is a focus of infection. The common notion that if a tubercular fistula is removed the patient is sure to go into a general decline is untenable in the light of modern bacteriology, which teaches that the bacillus tuberculosis may be in a state of pullulation in different parts of the organism at the same time or may be active in one part only. In other words, no effort to remove the process in any part should be precluded for fear of spreading the infection since a general manifestation of the process is simply predicated upon a pre-existing or simultaneous involvement.

Amoebic Ulceration

This type of recto-colonic infection and pathology is tropical born, but by reason of general travel it has migrated to temperate zones where we find it increasingly common. The entamoeba hystolytica domiciles in the appendix vermiformis, as well as in mucous crypts and folds of the large bowel, invade the submucosa causing no little destruction of the gut wall. The type of ulcer is distinct from any other in that it appears in chisled furrows much like a worm hole that is bisected in its long axis.

Intervening spaces of mucous membrane are apparently healthy but show a disposition to ooze on the slightest friction with cotton. Symptomatically, the stools are frequent, there is much tenesmus if the lesions extend low down, blood stained mucous, acquired anaemia, and general emaciation. These characteristics lead to exacerbations and subside for periods when influenced by treatment which only inhibit the process.

When the symptoms recur the clinician may think he is dealing with a tubercular ulcer, but right here is the differentiation; the amoebic ulcer improves under treatment while the tubercular does not.

The amoebic ulcer is the effect of the entameba hystolytica, in a state of pullulation, which can be overcome by direct contact with a solution at a low temperature which puts an end to their viability. I believe, for the most part, this treatment belongs to the domain of surgery.

I have been using, for about 2 years, in these cases irrigations direct and indirect. By direct, I mean through the cecum, and indirect by enemas, either precipitately or by Murphy drop enteroclysis.

The direct irrigation is much more effective because the appendix, a lurking place for the amebae, is removed, and the solutions can be used in larger volume, touching every part of the large bowel. The effect of this treatment is magical and seems to offer the best therapeutic program yet devised.

Bacterial Infections

At this point it is well to discuss briefly the bacterial digestion in the intestine. On an average diet, in 24 hours, the faeces of man weigh about 100 grams, after drying, about 20 grams.

About 1/4 of the dry matter consists of the bodies of bacteria. The greater number, however, have been destroyed probably by the action of mucin in the large intestine. The nitrogen content of the faeces amounts to about 1.5 grams a day, of which about one-half is bacterial nitrogen.

In a diet containing large quantities of cellulose material, as in green vegetable food and fruit, the mass of faeces and bacterial content may be much greater.

These facts indicate that very extensive bacteriologic processes must be going on all the time in the intestinal contents, and the question arises as to whether such action is beneficial or otherwise to the animal economy.

To answer this question, interesting observations have been made on the growth of animals by the use of sterile food.

The guinea pig will thrive well for a time with such feeding, but the chick does not thrive unless the grain is mixed with a certain amount of fowl excrement.

This shows that for certain groups of animals, bacteria are required, but not for others.

The difference probably depends on the nature of the foods. The large intestine varies according to the nature of the diet. Animals taking large quantities of cellulose foodstuffs have large caeca (plural of caecum) and long large intestines; while those like the cat, living on cellulose-free food, have but a rudimentary colon.

The forward movement of the contents of the large bowel is very slow, special provision being made by the presence of the so-called antiperistaltic wave to delay the movement. This indicates that an important digestive process must be going on in this part of the tract. Conditions develop in the caecum for the active operation of the bacteria. They attack the cellulose, and liberate the more digestible material of nutritive value. The acids produced are neutralized by the carbonates secreted by the mucosa. Man is omniverous, and the cellulose contained in his food is not itself sufficiently digested to furnish nutriment only as to permit the rupture of the cell, the contents of which are digested.

The cellulose is valuable in that it furnishes bulk or intestinal ballast.

In the large intestine of man, protein-digesting bacteria are also present.

These bacteria belong to the class - Bacillus coli communis, the various members of which are known as anaerobes because they can grow in the presence or absence of oxygen. If bacterial growth is excessive, the bacteria attack the amino acids produced by the digestive enzymes and decompose them into products that may be toxic if absorbed into the blood stream.

As we are here concerned with pathology, the most important action of bacteria is that which takes place on protein. Indicanuria warns us the extent of intestinal putrefaction.

The great importance attached to the products of decomposition lies in their powerful pharmacologic actions on the vascular system. Histomine, for example, produces marked vaso-dilation and lowers the coagulability of the blood, and other substances of the same class, like epinephrine, raise the blood pressure.

Larger quantities produce serious nervous symptoms and profound collapse. This leads to the belief that the persistent bacterial fermentation and absorption of decomposed products of protein into the blood ultimately cause arteriosclerosis and other symptoms of senescence. Botulism is the commonest expression of food poisoning, accompanied as a rule by paralysis of the intestine with constipation; the prominent symptoms are of the nervous system such as dizziness, visual disturbances, and difficult deglutition. If the intoxication is more chronic, the symptoms are vague, consisting of drowsiness, lassitude, headache, and general depression.

A good purge is here indicated. There can be little doubt that many conditions of the skin, such as pimples, acnes, and boils are caused by chronic intoxication with products of protein decomposition.

The importance of the relationship of excessive protein putrefaction in the large bowels to many minor diseases cannot be over magnified.

Ulcers from bacterial infections do occur but are not so well understood. They are known to harbour streptococci. They are difficult to treat and are frequently mistaken for the tubercular or amoebic types.

Today the question of focal infection is uppermost in the mind of the medical profession. Consideration has been given to every corner in the organism from which focal infections may arise, except that of the anorectal region.

Experimental investigations show that besides the crypts of Morgagni, there appear to be diverticuli in this region. These diverticuli are lined with stratified squamous epithelium, and that streptococci staphylococci, colon bacilli, and other bacteria, are found in their tunics and sacs.

Sigmoid and Ano-Rectal Infections

That the sigmoid is an inviting harbour for bacteria is the opinion of leading proctologists. This is evident when we consider its anatomic structure, tortuous in its course, anchored by a long mesentory, and whose mucosa shows numerous crypts and in many organisms minute diverticuli, which may become enormously enlarged. This we call Meckel's diverticulum. An infection of these minute recesses sets up the well known diverticulitis showing symptoms of so called left-sided appendicitis. As approximately 15%, of cancer of the large bowel occurs in the sigmoid, these diverticuli are reckoned with as probable causal factors in the new growth.

Again the resorptive power in the sigmoid as well as in the ascending colon is marked on account of the abundant supply of lymphatics which appropriate and carry toxins; moreover, this theory will explain so many failures recorded following appendectomy.

In this connection, it is my opinion that in cases of mucomembranus colitis, we should consider the endocrines in addition to local infections as casual factors. There seems in many patients to be such an expression of the symptom-complex as to show a lack of proper function of the suprarenals or other glands which form the second line of defense against bacteria.

There are some notions about infections in the rectum that should be corrected; namely - that an abscess frequently breaks through the rectal wall. This is very rare and only occurs where the suppurating process is extra-mural as in isolated cases of pyosalpinx or prostatic abscess, except in luetic strictures whose destructive process extends to the submucosa. Ischio-rectal infection occurs at the pectinate line where the structures join in fetal life. At this point the wall is very thin and permits the migration of bacteria through this hiatus, and determines the location of the internal opening of the fistula in the anal canal.

Some Sequelae of Infection

Constipation of the spactic order is the first deflection from health to claim our attention. What a common experience with patients to complain of lassitude coincident with colon stasis, relieved by a laxative or enema repeatedly practiced.

Synchronously, other penalties are borne by the organism insidiously, as gastric disturbance, headache, infected gall bladder, myalgias, leukemias, arthritides, and various neuroses, a not uncommon one being asthma. In this connection, I have reported a number of epiliptiform seizures in later adult life that seem to link up with infections of the large bowel.

Neurotic constitutions are well known sufferers from intestinal infections.

A certain number of persons suffer, more or less, from intense reflex disturbances going from the irritated intestine, by means of the bulb, thence by that of the vagus or the sympathetic system, and reverberating upon the most diverse organs.

The heart is subject to this reflex, with attacks of tachycardia after meals, then intermittences and irregularity of the hearts rhythm, and even attacks of pseudo-angina are not infrequent.

The proof that these phenomena are correlated to the function of digestion is that they are usually terminated by a stercoraceous exacuation with complete relief.

The terminal threads of the vagus in the lungs are also apt to be affected in the same way. I have often seen marked attacks of asthma. The patient suffocates for want of air, the windows are thrown open, the thorax is immobilized in the act of expiration, and inspirations are made with great difficulty.

When confronted by a patient with an infected colon, we write in our case record such notes as: haemorrhoids, migraine, gravel, arthritism, very great nervousness, hereditary nervousness, hepatic lithiasis, gout, rheumatism, impressionability, obesity in the family and tendency to worry.

In young childhood and especially infancy, eczema is a common observation.

Health balance is deflected by ano-rectal infections incident with haemorrhoids. The reflexes generated by haemorrhoidal disease are extensive.

Rectophobia is a term applied by Kelsey, describing a sense of impending evil which is so common in ano-rectal diseases.

He states:

> *"There is hardly any kind of pain or functional nervous disease that I have not cured by the simple removal of haemorrhoids."*

Undoubted changes in the adrenals occur through the emotions of fear and anxiety incident to rectal disease, thereby increasing the amount of blood sugar and influencing metabolism.

Summary

1. The colon and anal rectum are subject to infection and ulceration.
2. The types of ulceration are:

a) Tubercular
b) Amoebic
c) Bacterial

3. Local symptoms are similar with any ulceration, but vary in degree of persistence under treatment.
4. The ascending colon, sigmoid, and anal canal are important centres of local infection.
5. The effect of infection in the large bowel is far reaching." - Dr William M. Beach, MD, in "The Ohio State Medical Journal", August 1919.

The Work of Sir William Arbuthnot Lane

"Sir William Arbuthnot Lane, the great English surgeon and physician to the King of England was one of the first to demonstrate that bowel troubles have a reflex effect upon specific organs in the body. **He demonstrated that an irritation in the bowel can cause abnormal impulses to be sent via nerve pathways to a remote part of the body.** He spent many years specializing in bowel problems and was an expert at surgically removing sections of the bowel and stitching the healthy ends back together. Lane began to notice a peculiar phenomenon. During the course of recovery from colonic surgery, **some of his patients experienced remarkable cures of diseases that had no apparent connection to the surgery.**

Once a young boy who had had arthritis for many years had been using a wheelchair prior to his surgery, but 6 months later, this same boy was entirely recovered from his chronic arthritis.

Another case involved a woman with goitre. When a specific section of her bowel was surgically removed, a definite remission of her goitre ensued within 6 months. These and similar experiences impressed Lane greatly, **he saw the relationship between the toxic bowel and the function of various organs of the body.** After much thought about this relationship, **he became very interested in changing the bowel instead through dietary methods, and spent the last 25 years of his life teaching people how to care for the bowel through nutrition and not surgery.**

> ***"All maladies are due to the lack of certain food principles, such as mineral salts or vitamins, or to the absence of the normal defences of the body, such as the natural protective flora. When this occurs, toxic bacteria invade the lower alimentary canal, and the poisons thus generated pollute the bloodstream and gradually deteriorate and***

destroy every tissue, gland and organ of the body." *- Sir William Arbuthnot Lane, MD, in "Pandora's Box, What to Eat and why", 1936.*

His therapy of choice, was to remove the diseased section of the bowel.

The pathological state of the intestines of many sick people

Unless corrections in bowel cleanliness, lifestyle, and diet are made, any attempts, surgical or otherwise, to cure the condition will be only temporary. Dysfunction will, in time, manifest itself again.

Symptoms Associated With Intestinal Toxaemia

List of Autointoxication Symptoms,
Compiled by Dr Donald V. Bodeen, DC

Abdominal cramps
Abdominal pain
Back pain
Arthritis
Appendicitis
Acne
Burning sensations in the face, eyes, hands, or feet
Bloating
Bad breath
Body odour
Bladder infections
Bad dreams
Constipation
Coryza (common cold)
Catarrh (inflammation of mucous membranes)
Coma
Cataracts
Complexion alterations O Boils
Carbuncles
Clammy skin
Delirium
Diarrhoea
Drowsiness
Dementia
Depression
Dermatological conditions
Dry eyes
Degeneration of organs O Skin wrinkles

Degenerate, unclean thoughts
Foot odour
Fatigue
Forgetfulness
Flatulence
Fitful sleep
Fallen arches
Fibrocystic breasts
Headaches of various types
Heart arrhythmias (erratic heartbeats)
Haemorrhoidal pain
Hypertension (high blood pressure)
Hypotension (low blood pressure)
Hardening of the arteries
Indigestion
Indecision
Irritability
Insomnia
Insanity
Itching
Inflammation or enlargement of the spleen
Kidney disorders
Leg pains
Lack of ability to concentrate
Melancholy
Muscle atrophy
Muscle inflammations
Mastitis
Malaise
Nausea
Ovarian cysts
Prolapse of abdominal organs
Photophobia (sensitivity to light)
Pain behind the eyes
Posture alterations
Stupor
Sinus problems
Sensitivity to noise
Tics (repetitious, sudden, involuntary movements)
Tearing eyes
Tumours
Tonsil troubles
Twitching of muscles
Vision disturbances

Intestinal toxaemia manifests as one or more of the following:
list compiled by Dr Bernard Jensen, DC

Allergies
Arthritis
Asthma
Cardiac irregularities
Eye, ear, nose, and throat diseases
Endocrine disturbances
Fatigue
Gastrointestinal conditions
Headaches
Low-back pain
Malabsorption of nutrients
Nervousness
Neurocirculatory abnormalities
Pathological changes in the breasts
Skin manifestations
Sciatica (inflammation of the sciatic nerve in the hip)

Arrhythmias

Arthur C. Guyton, MD, for many years a professor in and the chairman of the Department of Physiology and Biophysics at the University of Mississippi School of Medicine, states that "toxic conditions of the heart" can cause arrhythmias.

In the late 1980s, Dr. Bodeen reported on the particular case of a young female patient who had come to his office suffering from heart arrhythmias.

Her symptoms were completely alleviated by cleansing her colon and modifying her diet to greatly improve a chronic toxic bowel.

Prior to the diagnosis of chronic toxic bowel, the young woman had been unable to find the cause of her arrhythmias, although she had been hospitalized several times and had submitted to a number of the diagnostic studies used by the medical trade. It seems that no one had made the connection between a chronic toxic bowel and her episodic heart arrhythmias. The connection between these two conditions had been noted in 1916 by Dr. D.J. Barry, a professor of physiology at Queens College in Cork, Ireland.

Dr. Barry had stated: "There seems little doubt that substances having a deleterious action on the heart musculature and nerves are formed both in the small and large intestine, even under apparently normal circumstances".

Eclampsia

R.C. Brown, MB, MS, FRCS, in 1930, linked intestinal toxemia and eclampsia, the latter commonly known as toxemia of pregnancy. Preeclampsia and eclampsia are conditions that develop as a complication of pregnancy.

The conditions are characterized by a rise in blood pressure, the presence of albumin (protein substances) in the urine, and edema (swelling), which, if left untreated, can lead to coma and convulsive seizures.

Chronic Toxemia's influence via the circulatory system and the nervous system can affect any part of the body.

Eye Conditions

Dr. Harold M. Peppard, in "Sight Without Glasses", says that eye-strain "is acute when the eyes are used, for example, during any severe toxic condition."

Epilepsy

C. A. Harter, MD, a lecturer on the anatomy and pathology of the nervous system at New York Polyclinic, in 1892 linked intestinal putrefaction to epilepsy in 31 patients.

He based his conclusion on the successful treatment of epilepsy by controlling the bacterial activity of the intestine.

Sciatic Neuralgia

Carl Von Noorden, MD, a professor in Vienna, Austria, in 1913 found: "pains especially frequent which correspond to the ordinary sciatic or intercostal neuralgia."

Sciatic neuralgia is pain radiating down one or both legs, usually from the spinal nerves in the lower back. Intercostal neuralgia is pain in the chest, in the area between the ribs. Both these symptoms are common complaints.

He treated these conditions by relieving intestinal toxaemia.

The Neural-Arc Reflex (Bowel Reflex)

The Neural-Arc Reflex (Bowel Reflex) is very special to me (Bernard Jensen). It is my story. It is the result of my many years of work and experience with thousands of people at my sanitariums, as well as with my own bowel problems.

At age 76, I experienced problems with my left hip and leg. I went to 5 or 6 chiropractors in the hope that they could help me. In that occasion I received only the most temporary relief. It shortly became obvious that my problem did not lend itself to joint manipulation or chiropractic spinal adjustment alone.

The doctors I had seen all had failed to make the connection between my hip and leg symptoms and my bowel. Even though I have been teaching people about proper diet, bowel care, and exercise nearly all of my adult life, I was greatly impressed by my personal experience with the relationship between diverticula in specific locations and problems in specific parts of the body.

Not too many years ago, I gave a name to this phenomenon of certain areas of the bowel being linked to certain parts of the body. I called the phenomenon the Neural-Arc Reflex, a name based on the physiological phenomenon of involuntary response to a stimulus.

These involuntary responses, or reflexes, are similar to such occurrences as a knee jerk when the area below the knee is struck with a doctor's reflex hammer. The neural-arc reflex occurs when a portion of the bowel is irritated by the toxins associated with static, putrefactive debris, and aberrant nerve impulses are transmitted, via nervous pathways, to a remote area.

These impulses cause symptoms to occur reflexly in the remote area. In other words, there is a relationship between certain organs, glands, and tissues, and certain parts of the bowel.

There was a relationship between the dirty bowel pocket I saw on my X-ray and the symptoms I was experiencing in my hip and leg.

Treating the hip and leg with various therapies did nothing to get at the root cause of the problem. As long as the colon condition remained untreated, the symptoms persisted. **The neural-arc reflex is the perfect example of why the bowel is the king of the elimination channels.**

Referred Pain

Bowel problems can cause symptoms that mimic a multitude of diseases, and doctors are quite familiar with complaints of pain in one area that are caused by a problem in another area.

This is called “referred pain”. **Referred Pain is actually a rather common occurrence.** Pain or any symptom experienced in one part of the body but stemming from a condition in a different location can present a diagnostic challenge for an examining physician. This situation can be quite puzzling to the - patient as well.

A common example of referred pain is the pain that is sometimes experienced in the right shoulder but stems from a gallbladder attack. Another common example of referred pain is the pain that is experienced in the left arm but stems from a heart condition. No pathology exists in the shoulder or arm itself.

In cases of referred pain, it would be ineffectual in the least and perhaps even dangerous to treat the pain site while leaving the cause of the problem unattended. Referred pain demonstrates how, the connections of the body are manifold and complex.

The digestive tract is the great console of the body. It can be the creator of harmony or disharmony.

Disharmony occurring in the digestive tract has its sounding board in areas of the body removed from the gut.

The nervous system, via countless pathways, connects the walls of the digestive tract to every corner of the body. Because of this, both neurological and anatomical, the bowel reigns supreme.

The Discovery of the Neural-Arc Reflex

I consider this to be my greatest discovery in my professional health career.

In the days when doctors still made house calls, when I was just breaking into the healing arts, Dr. Glen Sipes asked me to accompany him on an emergency house call to Oakland, California.

We arrived to find a young man in his thirties in bed with a high fever, his skin as red as a beet and all his joints filled with great pain. Dr. Sipes percussed (tapped) the man's abdomen over the bowel, listening carefully. He asked the patient, if he had a bowel movement today.

The patient replied he had no bowel movement for the last few days. In fact he did not remember when he last had a bowel movement.

Dr. Sipes then prepared an enema. After repeated enemas, the patient's fever went down, skin colour returned to normal, and the pain disappeared. All this took place in less than an hour.

I could hardly believe that such great relief could come to a person just from taking care of the bowel. This made a believer out of me! I had seen it with my own eyes.

Dr. Max Gerson was a medical doctor who used enemas to clean his patients bowels. He wrote the book “Fifty Cancer Patients Cured”.

Watching Dr. Gerson at his sanitarium in New Jersey, confirmed my faith in bowel cleansing.

When I read the works of Sir W. Arbuthnot Lane, I saw that his surgeries to cut out diseased parts of the colon sometimes resulted in complete relief of diseases elsewhere in the body such as arthritis, asthma, and toxic thyroid. I thought, “There has to be a connection between the condition of the bowel and the other parts of the body, but what is it?”

In the 1940's, I had patients with pain in a specific part of their bowel who also had cancer or another serious condition in some other part of their body some of the patients, through a specialized diet, or other cleansing work, reported complete remission of their degenerative condition.

I was getting wonderful results with patients, teaching them how to work for a healing crisis.

Healing Crisis

A healing crisis is the crisis point during which the body works the hardest to rid itself of mucus and catarrh, old symptoms reappear and resolve, the bowel elimination is often unbelievable.

A healing crisis usually lasts from 3 to 7 days and always brings a wonderful reversal of some chronic condition. And, the bowel is always involved the crisis.

To learn more about the **Bowel Reflex, which I named the Neural-Arc Reflex**, I began to study embryology. **I learned that by the second week of formation, the embryo takes the shape of the primitive "gut tube", and its nervous system begins to form.**

This means that the bowel tissue and nerve tissue are very intimately related.

By the 4th week, buds such as the lung bud and liver bud begin to bulge out from the gut and nerve tissue. By the 6th week, most of the organ buds begin to form.

These organ buds, I suddenly noticed, are covered with a membrane made up of the same tissue that formed the bowel and nerve tissue in the earlier embryo.

That was when I realized that **the tissue of the primitive gut surrounds each organ with a membrane.**

This is the key to the neural-arc syndrome. I could now see how certain areas of the bowel were reflexly related to specific organs. Toxicity or nutrient depletion in one would affect the other. This makes that part of the bowel and that organ more subject to breakdown and consequently to diseases.

I refer to genetically weak tissue as an "inherent weakness", and most of my students and patients understand that by an inherently weak organ I mean an organ that is more vulnerable to nutrient depletion and toxic encumbrances than "normal" organs. An inherently weak organ is more subject to breakdown and disease.

Autointoxication due to underactive elimination channels soon brings on enervation and fatigue. This is what Dr. Tilden taught: "**The beginning of all disease is toxaemia and enervation".**

Normally, if an adverse condition develops in a weak part of the bowel, it will reflex to some other part of the body, causing a problem possibly very remote from the source of the trouble. Because of the lack of pain nerves in the bowel, the patient doesn't complain about the bowel, and the Medical Trade Doctors have no reason to suspect that the problem is in the bowel.

To take care of inherent weaknesses, we must take care of the whole person! But, always the bowel first. If we take good care of the bowel, we can make the most of it and have better health as a result.

This is why it is so important to take care of the bowel - to keep it clean and well-nourished.

If we take care of our living habits, nutrition, and thinking, we will take care of any inherent weaknesses in the bowel and any organs that are reflexly affected.

Body Structure Functions

What is not so well known is what we are discussing here - namely, that problems in the digestive tract can cause symptoms to appear almost anywhere in the body, even in areas far removed from the bowel, such as the head and even the feet.

Our search for our physical roots begins with the moment of conception. On the physical plane, the new cell that is created by the union of sperm with egg begins immediately to divide to form two cells.

Then, each newly formed cell repeats the division process until, after three or four days, a little ball of cells exists.

Though microscopic, this ball of cells bears a striking resemblance to the common mulberry At this stage, the tiny "mulberry" is composed of twelve to sixteen cells and is known as a morula, which, by the way, is Latin for "mulberry" By the end of the first week of its gestation, the embryo, now known as a zygote, is ready for implantation in the womb. There it will be nourished to term by the mother. A new person is on the way!

Near the end of the first month following conception, some fantastic events occur. The developing body assumes a cylindrical form. A groove soon appears and deepens, becoming the neural canal, which is the forerunner of the nervous system, including the brain and the spinal cord. The innermost layer of cells now rolls into a tube, called the primitive gut tube, which eventually becomes the digestive tract.

If you would liken the primitive human intestinal tract to the trunk of a tree, you will find that many of our internal organs bud out from the gut tube in much the same way that young limbs bud out from the tree trunk. And, like the bark that covers the branches of the tree, none other than the intestinal wall itself surrounds and covers these organs.

The liver is covered with intestinal wall as it buds out from the intestinal tube. The pancreas is also surrounded by intestinal wall. So are the gallbladder, the stomach, the lungs, and even the urinary bladder. Also the trachea, larynx, and pharynx. Each develops by budding out from the primitive gut tube, from the intestinal tract, assuming as its covering the intestinal wall complete with its supply of nerves.

Now you are ready to see why the bowel is crucial, and how it relates to the Neural-Arc Reflex.

A diverticulum acts as a trap, much like the curved pipes under a sink. It is prone to collecting debris that would be carried out with a normal bowel movement if the diverticulum were not there. I have described this trapped material as being similar to the flotsam that collects at the bend of a stream, refuse that has been sidelined from the main current and is unable to move on.

Colonic debris can collect in the bends and pockets of the bowel. In the moist, bacterially laden, warm body, this trapped material stagnates and ferments, becoming an irritant to the colon wall. The resultant nerve irritation sends

messages via established nerve routes and reflexly affects distant locations.

Thus it is that irritations in a particular segment of the bowel often are associated with symptoms in other areas of the body.

A common example of the neural-arc reflex is seen with heart problems. Diverticula located midway down the descending colon can reflexly interfere with nerve impulses to the heart, resulting in arrhythmias. Also, diverticula are excellent collection sites and can produce gas from fermentation, resulting in pressures upon the heart that mimic heart attacks.

Any emergency-room attendant will tell you about the large number of people who arrive believing they are experiencing a coronary when, in fact, their troubles stem from intestinal- gas pressures that are reflexly affecting the heart. Symptoms associated with a bowel irritation may manifest in the heart, but in such a case there is nothing wrong with the heart itself.

Another example is the nerve interference that can result from chronic irritation at the sigmoid flexure of the colon. In females, the reflex area most associated with this is the ovaries. I know from experience that many an ovarian condition or menstrual problem is associated with this. I cannot help but wonder how many doctors think of the bowel when their patients complain of these troubles.

The neural-arc reflex occurs most frequently when the tissues that are neurologically associated with a pocketed section of the bowel are inherently weaker than normal. Areas of inherent weakness are areas of the body in which toxic materials finally settle and accumulate, and infections develop. We can have problems in any of the various parts of the body, and invariably, these infections are induced by irritations or problems in the bowel due to the neural-arc reflex.

In my studies over the last 45 years, I have found a striking correlation between conditions in sections of the bowel and conditions in other specific parts of the body. For example, when a patient complains of a breast condition, there is a certain place in the bowel that I suspect harbours a low-grade infection that is affecting the breast area. The following cases further demonstrate the relationship.

I once examined a lady who suffered from an acute exacerbation of chronic torticollis (wry neck). In this condition, contracted neck muscles cause the head to be held in an unnatural position.

When I examined her and told her that I would make a chiropractic adjustment to her neck, she refused. She related that she had received several neck adjustments, each of which seemed only to make the condition worse. She just couldn't stand to have anyone touch her neck again. Although as a chiropractor I'm “supposed” to make adjustments, and I was eager to practice my profession, I was also aware of the neural-arc reflex. When I asked if she ever had any bowel trouble, she indicated that she'd had problems for years. Lately, about the time the neck problem became acute, her bowel had become worse. Instead of performing an adjustment, I advised the lady to immediately take an enema. She had three enemas within one hour, and while I was still there, she obtained complete relief from her stiff and painful neck. This was quite an eye-opening experience, one that I have not forgotten in all these years.

Another situation that dramatically illustrates the neural-arc reflex was related to me by Dr. Bodeen, who brought to my attention a woman who had lost her voice.

Able to speak only in a whisper, the woman stated that this condition occurred periodically for no apparent reason and would last from days to weeks. In this case again, she could not relate it to any sickness, event, or trauma. The situation was further complicated by the fact that she was employed as a telephone operator!

This patient revealed that she had spent much time and money seeking the best doctors in an effort to determine the reasons for these mysterious episodes. When a number of doctors could give no satisfactory physical reason for her periodic loss of voice, it was suggested that she see a psychiatrist. Her doctor thought it could be an emotional problem.

I have personally seen many people in my office who, with great emotion, tearfully begged me not to tell them their problems were merely the result of some psychological disturbance, as their doctors had condescendingly suggested.

But surely, it is not good practice to write off what is essentially a physical condition as an emotional problem merely because it eludes the doctor's diagnostic acumen. This practice causes untold mental suffering in misdiagnosed patients, of which this woman was one.

I am pleased to tell you that on the third day of the tissue-cleansing program, the woman regained her voice. In fact, her voice was once again strong and clear. Regaining her voice brought happiness enough, but it was most satisfying to her to learn that she had experienced the symptom due to a direct relationship with a colon problem. It was a classic manifestation of the neural-arc reflex. Her doctors had been quite correct in declaring they could find no problem with her vocal apparatus. A problem in the bowel was causing the symptoms in a distant but neurologically related area. To date, this patient has not had a return of her symptoms. Neither her throat nor vocal cords were treated. No medications of any kind were administered. Colon cleansing was the only treatment.

Do you think the bowel can affect your liver? Your kidneys? How about your feet? The bowel can affect anything. Anywhere. Anytime. People are suffering from conditions they would never think could have anything to do with the bowel. These people are usually treated for the symptoms of their condition rather than for the cause of their distress.

Pain

It takes a certain type of nerve to transmit what is interpreted by the brain as pain. Although there are millions of nerves in the body, only some transmit pain information. The brain itself has no pain sensors. It seems odd that the organ which interprets certain nerve impulses as pain has no capacity to receive pain sensations from its own structure.

Surgeons find there is no pain or other feeling elicited when the brain is touched or even cut! The same is true of the bowel. Bowel surgery requires

anesthetic so that the surgeon can cut through the muscular abdominal wall, which is pain- sensitive. Once inside the abdominal cavity, the surgeon may handle the bowel, both large and small, without causing pain.

Now you should begin to see why people can have problems in the bowel, even of long standing, and frequently experience no pain there. It is not uncommon for people to have severe problems, even bleeding, in the bowel and experience no pain or discomfort at the site.

As we are now aware, there may be problems manifesting at a secondary and distant site that is reflexly stimulated by a primary bowel condition. And there may be intense pain at the secondary site with no discomfort whatsoever at the primary site, the bowel. This is why we say that by the time a person experiences localized bowel pain, the condition is often very serious and in need of immediate attention.

Even though the bowel is greatly lacking in pain-receptor nerves when compared to other parts of the body, people can and do experience symptoms in the bowel. Early symptoms are so ordinary, they usually do not receive serious attention. They are ignored. It is not unusual for people to neglect tell-tale digestive symptoms for months and years.

This allows time for intestinal problems to become chronic. During this time, remote sites are likely to become disturbed via the neural-arc reflex. Something as simple as recurring bouts of indigestion, chronic constipation, gastritis (stomach inflammation), or ulcers can be the alarm signal that all is not well in the digestive area.

Treating the Neural-Arc Reflex

Neural-arc-reflex activity is not only genetic in origin, but is the cumulative result of years of bad habits. The only way to break a bad habit is to replace it with a good habit. Physiologically speaking, replacement therapy involves the body's replacing old tissue with new.

This happens when, through nutrition, we replace the chemical elements that we have been lacking in the body. Replacement therapy also applies to the mental side of life when we practice a better way of living. Working to cultivate a good habit to overcome a destructive one is a type of replacement therapy.

I've never heard anybody complain about a good habit! Even though all habits take time to become established, there is no time like the present to begin practicing good ones. Delaying or postponing something serves only to foster undesirable habits by providing additional time for them to become entrenched.

Emotions and the Bowel

We have seen how the neural-arc reflex operates and how nerve pathways can be established and facilitated from the bowel to other areas of the body. Now we must consider the neural-arc reflex in reverse. Our emotions - that is, our feelings

and mental state - have a great effect on the bowel, so much so that the bowel in ancient times was called “the seat of the emotions”.

The colon is extremely sensitive and is influenced greatly by every emotion, both positive and negative. It has been proven that unpleasant emotions can interfere with the peristalsis of the colon, regardless of how slight the excitement, anxiety, or apprehension is. This is because the brain sends as well as receives nerve impulses. Until now, we have merely considered how nerve impulses coming from the bowel can affect other parts of the body, but there are also nerves going to the bowel.

Anatomically, the nerves tend to follow the paths of the blood vessels. They innervate the blood vessels, constricting or dilating them, as the case may be, as well as having a contracting or relaxing effect, or an irritating or soothing effect, upon the tissues in which they terminate. Thus, every emotion mediated via the nervous system has an effect upon the blood supply and the muscles of the colon.

Our state of mind - that is, our thoughts - can facilitate the neural-arc reflex, especially at the points in the bowel where there are inherent tissue weaknesses. This is the neural-arc reflex in reverse.

Fear and anxiety can have profound effects, for the tensed colon may respond with diarrhoea or constipation as the nerve impulses carry the message of fright to the bowel. The bowel remains affected until the apprehension or fear subsides. One study that included X- rays of dogs and cats clearly showed the effects and associations of certain emotions on the nervous system and the colon. The dogs, placed in unfamiliar surroundings, ceased to have peristalsis in the colon for several hours. When the cats tails were pinched, peristalsis ceased until the cats were once again contented. On the other hand, battlefront surgeons are familiar with the loss of bladder and bowel control experienced by soldiers exposed to the stress and terror of battle conditions. Peristalsis can be triggered as well as halted by emotionally impacting events. Anger and grief may cause the bowel to stop secreting and contracting, both of which are necessary for good digestion and for the evacuation of wastes from the body, therefore don't eat when you are upset or excited. Don't never let your table conversations be such that you become emotional or upset while consuming your meals. Certain common bowel disorders are known to be linked to the mental side. It is known that colitis, for example, has to do as much with the thoughts and emotions as with the bowel. In fact, it has been clinically affirmed that nearly all functional bowel disorders have a definite mental counterpart. Inflammation of the bowel can be exacerbated and even brought on by nervous tension and stress.

People have much better bowel movements when they are free of emotional pain and financial worry. Good companionship, relaxation, and music can be stress-reducing and relaxing, and thus conducive to good bowel movements. The bowel will not function correctly until we learn how to live properly. There is a right way of living, and it isn't just about food and diet. It is important to approve of yourself and to get along with other people, because when it comes to the bowel, it isn't always what is wrong with you. It may be who is wrong with you!

Symptoms and Parasites

A number of people have passed parasites during the colon cleanse. One woman passed "a bucket of worms". Another found her breast problems relieved by the elimination of parasites, reminding us again of the reflex relationship of the bowel to all the parts of the body." - Dr. Bernard Jensen, DC in "Guide to Better Bowel Care", 1999.

Chapter 39

The Influence of the Nervous System and External Temperature Upon Certain Circulatory Changes

Concerned in the Etiology of Catarrh, Ulcer, and Simple Dilation of the Stomach

"For several years I have been paying attention to disturbances of the Vaso-motor System and I have observed a large number of cases of one kind and another in the wards and out-patient department of the Royal Halifax Infirmary.

Whilst noticing the circulatory changes so commonly seen in the extremities I have been impressed with the frequency with which these symptoms are associated with others suggestive of circulatory disorders in one or other organs of the body.

I have been struck with the fact that the bulk of patients under my care suffering with gastric disorder, whether ulcer or simple dilatation, are of a neurotic temperament and show marked circulatory changes in the extremities which have existed for a long period before the onset of the gastric symptoms or have appeared coincidently or subsequently to their development, and I have asked myself the question, Is there not a connexion between the gastric symptoms and those manifesting themselves in the extremities?

There is normally a very close relationship between the systemic and splanchnic circulation which includes the stomach and other viscera, and disturbances in the one sooner or later create disturbances in the other and destroy that physiological balance which should exist.

Circulatory Disorders

There is great significance in the remark, so frequently heard in the consulting-room, "I have always a poor circulation", which we may not have always appraised at its value.

If vaso-motor changes in the periphery are neglected and no treatment is adopted to remedy the same, there may develop functional symptoms pointing to a considerable alteration in the circulation of some organ or organs, and this may involve the stomach, particularly if carelessness occurs in diet. I know that coldness and cold extremities are mentioned as symptoms occurring with certain stomach diseases, but only as symptoms secondary to some gastric disorder.

I now wish to deal with them as physical signs of an important disturbance of the circulation, aggravating and sometimes causing gastric disease. Sir Thomas Barlow has noted the appearance of stomach and other symptoms in 2 or 3 of his

published cases of Raynaud's disease, which would seem to have been induced by peripheral changes affecting the splanchnic circulation.

One of these was that of a woman who at the outset of the attack of cyanosis of the extremities had nausea and sometimes vomiting, showing a disturbance in the gastric circulation; and another case he records in a boy who not only had gastric symptoms but hsemoglobinuria with vaso-motor disturbances in the extremities.

Abercrombie in "Archives of Pediatrics", 1886, also reports the case of a boy who suffered pain in the stomach when the hands were cyanosed and the urine was normal, but subsequently haemoglobinuria developed.

Porter in "The Lancet", 27 April 1889, reported the case of a middle-aged woman who was liable to attacks of local syncope and asphyxia of the hands and feet, occurring 3 or 4 times a day and alternating with paroxysmal attacks of epigastric pain and vomiting, usually followed by slight jaundice. Albumin and bile were found in the urine after such a seizure but no blood or blood colouring matter was detected.

Causes of Disturbance of the Gastric Circulation

The gastric circulation may be disordered in 3 ways:

1. Through the central nervous system
2. By the irritation of food
3. By changes of external temperature

All of these causes may be combined in bringing about the circulatory change.

Mental Causes: Excitement and worry

Functional disorder of the stomach as part of a general functional disturbance of the nervous system.

It is evident that the nervous disturbance mainly acts by altering the blood-supply of the stomach and Sidney Martin in "Diseases of the Stomach", states:

> *"Changes in the blood-supply and in the processes of innervation are of great importance in stomach disease."*

Any mental excitement or worry may cause or aggravate an attack of indigestion and this is probably through a deficiency of splanchnic control, which allows blood to yield to gravity and pass to the splanchnic area of the abdomen instead of the limbs.

Leonard Hill in "Allbutt's System", Vol. VII, p. 250, has pointed out how vaso-motor constrictor control of the splanchnic area normally forms the resistance box of the circulation and prevents gravitation.

A lady who was consulting me stated that whenever she had anxiety she felt

some chilliness of the body, with discomfort and pain in the stomach; and another patient of the same type told me that she always felt worry referred to the stomach, with an abnormal feeling of coldness of the body and extremities.

Dr. H. G. Sutton in "Lectures on Pathology" wrote:

> *"Under extreme mental depression and harass the stomach, like the face and other surfaces, may become congested and undergo catarrhal inflammation and the vessels become so full that haemorrhage may result."*

These cases all point to the great influence of the mind over the circulation of the stomach - a fact demonstrated by Pavlov in his experiments upon gastric secretion.

Dietetic Errors are Chiefly Manifest in the Nervous

The gastric circulation, as we know, is also disturbed locally by the ingestion and irritation of some article of food or beverage, and if the irritation continues not only is there a local but a general disturbance of the circulation.

When dietetic errors produce so called dyspeptic symptoms it is chiefly in those of a nervous temperament, excepting some who abuse themselves with alcohol, tobacco, etc., for it is extraordinary how tolerant the stomach is and what it will digest without producing any symptoms of disturbed function when the nervous system is normal, and some of the most robust will say, "I can eat anything."

I suggest, then, that it is in the nervous that indiscretion in diet shows itself most frequently, and then by locally disturbing the innervation of the stomach and producing reflexes which excite a hyper-sensitive vaso-motor centre.

If dietetic errors be persisted in, the more or less continuous irritation causes an increasing tendency for blood to be drawn to the splanchnic area and leave the periphery, hence the development of symptoms of coldness of the body and extremities in chronic gastric disturbance.

I emphasise this as being an important development, for any increase in the amount of blood in the splanchnic area tends to aggravate the already congested stomach, and other pathological changes such as superficial ulceration of the mucous membrane may follow, or a gradual dilatation of the organ, through loss of motility. With the poor, and particularly young women in the northern manufacturing towns, the abuse of tea is very common, and I believe more detrimental to the stomach than almost anything else, for tea is the popular beverage but is too frequently allowed to infuse for an indefinite time before being used.

Grave Circulatory Disturbances Excited by Gastric Irritation

We sometimes see local irritation in the stomach cause very acute gastritis or catarrh and the general circulation may become so quickly and completely

disorganised as to border on collapse. This condition generally occurs in those who have previously shown functional disturbance of the stomach and who have taken some article of food which has acted as an irritant. I have seen several of such cases explored for perforation which has not been found. **In one case a young woman in the Royal Halifax Infirmary who had been under observation for gastric catarrh ate some strawberries.**

Shortly afterwards symptoms of collapse developed and were of so serious a character that Dr. Priestley Leech, under whose care she was, explored the abdomen in order to find out if perforation had taken place, but found none.

In another case under my colleague, Dr. W. Lockwood, a woman who for several years had suffered with gastric symptoms, after partaking of some pickled cabbage was seized with pain in the stomach, followed by the development of a condition of collapse of such a serious character that after consultation with his colleagues it was thought to be probably due to gastric perforation and an exploratory operation was deemed desirable.

Pye-Smith in "Quarterly Medical Journal", 1901 has published similar cases in which he explored the abdomen in these circumstances expecting to find gastric perforation, but nothing was found to account for the symptoms.

This extreme condition would appear to be brought about by irritation in the stomach provoking afferent impulses to the vaso-motor centres and causing such a dilatation of the vessels of the splanchnic area and fall of blood pressure that blood which ought to be in the periphery is stagnated there, and is sometimes confused with that due to ptomaine poisoning.

It also demonstrates the gravity of a great displacement of blood to the splanchnic area.

Stewart in "Manual of Physiology", p. 166 has said:

> *"Not a drop of blood maybe lost from the body and yet death may occur from haemorrhage into the abdominal cavity, into the stomach, or intestines. A man may bleed to death into his own blood-vessels."*

The Influence of External Temperature upon the Gastric Circulation

Having shown that the stomach circulation may be disturbed by mental influences and by local irritation of food, we most now consider what the influence of external temperature is upon the gastric circulation, for this has an important bearing upon treatment.

The effect of temperature upon the individual varies considerably and whilst the majority do not feel change of temperature in any marked degree there are others much affected by it, the more nervous and particularly women being most sensitive. Some feel both extremes of temperature, but by far the largest class feel the cold abnormally; they seem intended for warmth and express themselves as only comfortable in warm or mild weather. The feeling of coldness may be limited

to the extremities or particular parts of the body, or may be more or less general.

With different instruments, I have taken the blood pressure in many of these cases and I find that cold tends to raise the arterial pressure whilst the venous pressure is lowered, and though these changes may be only temporary, yet with frequent narrowing of the systemic area by exposure, and a diminished tone in the splanchnic arterioles, there is a disposition in some to loading of the splanchnic veins and accumulation of blood in the splanchnic reservoir.

Others feel heat abnormally and seem designated for cold weather, and in them the arterial pressure is found low and the venous high, but these do not suffer so much with gastric troubles as with cutaneous and other disturbances.

Nearly all vaso-motor disturbances in the periphery are affected by changes of external temperature and may be observed there, but these changes, if considerable, cannot take place without others occurring internally, of a more or less compensatory character.

The influence of a cold atmosphere upon the cutaneous circulation is in some very rapid and circulatory changes may take place in the coronary, pulmonary, splanchnic, kidney, or other circulation in those exposed, but there can be no rule as to which organ will be chiefly affected. Confining our attention to the stomach, we must confess that the effect of external temperature upon gastric disorders has been too little regarded, important as it is.

We see some who are liable to functional disturbance of the stomach markedly affected by changes of temperature; for instance, the change of temperature during the early hours of the morning may cause the patient to wake with coldness of the extremities and gastric pain, or the difference between the temperature of a warm room and one which is cold may be sufficient to cause discomfort in the stomach, whilst in others a cold east wind very often causes pain, accompanied or not with flatulence and nausea.

The same people are sensitive to cold water and cannot take a cold bath, which has a similar effect upon them. In these cases the blood, driven from the skin by contraction of its vessels, chiefly affects the splanchnic area and is a similar displacement to that which normally takes place during the act of digestion, though the excitant in the latter instance is reflex from the stomach and is excited by food, whilst in the former it is the stimulus of a cold temperature acting upon the vaso-motor centres which brings about the changed condition of the cutaneous circulation.

When food is introduced into the stomach an enormous amount of blood is drawn to this part for purposes of digestion and there is a correspondingly small amount in other areas, such as the skin, and in the healthy a feeling of chilliness is not infrequently experienced after a full meal (Stewart).

A similar circulatory change brought about by exposure acting upon the sensitive nervous apparatus of the periphery is abnormal and if constantly repeated, as in the case with those much exposed in gaining a livelihood, may produce a chronic congestion and blood stasis, which if prolonged will become serious to the organs chiefly concerned.

The bulk of my hospital patients with gastric disease are young women employed in mills Such an occupation tends greatly to aggravate any predisposition to circulatory changes. Rising very early in the morning and frequently with little or no food and that least suited to their condition, not too well clad, they face the weather, whatever it may be, and if working in a heated mill (more especially a cotton mill) are subjected throughout the day to extremes of heat and cold.

The domestic servant represents another class undergoing a similar kind of experience and should she have the same tendency to vaso-motor disturbances her early morning duties may expose the sensitive peripheral vessels to sudden chills and the organ or organs most susceptible suffer.

A servant maid who had gastric perforation and who was successfully operated upon by a colleague stated that she had learned by experience not to use cold water in her domestic work, the immersion of the hands causing so much discomfort and pain in the epigastrium; whilst another, under my care for Haematemesis, described the epigastric pain as always coming on in the early morning when cleaning steps in a very exposed and cold position.

Comparing the life of these workers with one in a different social position, having every comfort but with the same predisposition to circulatory changes, can we wonder that there is such a marked class distinction in those usually suffering with gastric ulcer, for undoubtedly it is more commonly seen among the poor?

Seasonal Influence Upon Gastric Disorders

We must admit that gastric cases are most prevalent during the cold season of the year. I have made observations for several years on this point which conclusively prove that functional disturbances of the stomach and liver are more commonly met with during the first and last quarter of the year.

Lauder Brunton in "Allbutt's System", Vol. III, p. 199 says:

> *"Many people who are perfectly well during the dry weather begin to suffer from dyspepsia as soon as the weather becomes cold and damp."*

Robert Hutchison in "Brit. Med. Jour.", Vol. II, 1905 remarked:

> *"It is in the spring of the year that most dyspeptics are loudest in their complaints."*

Risien Russell, in "Allbutt's System", Vol. VIII, p. 51, writing on gastric tetany, which in the adult is frequently the result of gastric dilatation, says that exposure to cold will produce the tonic contraction of the extremities, and according to Gunbrecht nearly 3 out of 4 of the cases of Tetany occur between the months of January and March.

Eustace Smith in "Brit. Med. Jour.", Vol. I, 1906 pointed to the influence of chill in producing acute gastric catarrh and disturbance of the liver in children.

Splanchnic Congestion from Malaria and Burnt of Body

There are other conditions which bring about an active congestion of the splanchnic area and we must consider if they are in any way connected with changes in the stomach amongst other organs.

In the cold stage of malarial fever we have a big displacement of blood from the skin to the internal organs which often causes nausea, vomiting, and intense headache, the pulse being small in volume and the urine increased in quantity. In severe cases there is haemorrhage from the mucous membrane of the stomach and bowel, also haemoglobinuria or haematuria.

Rokitanski attributed some of his cases of gastric ulcer to malaria and if we consider the congested condition of the mucous membrane of the stomach in the remittent form when there is probably a condition of splanchnic stasis there is some reason for associating the two diseases, and English authors have spoken of malaria as a cause of ulcer of the stomach.

In burns of the body, in the stages of shock and collapse, there is a great determination of blood to the splanchnic and other areas, and ulceration of the duodenum and stomach is seen.

The fact of the ulceration in burns taking place about the tenth day has been thought by some to point to septic emboli as the cause, but it is difficult to understand why the emboli in the circulation should generally select the duodenum for their point of attack. In injury to the skin it is not uncommon to have catarrhal inflammation of the mucous membrane of the upper part of the small intestine and stomach and not infrequently mucous and submucous haemorrhages, and in 3 cases of duodenal ulceration examined by Fenwick he found evidence of them being secondary to haemorrhage. It is then probable that ulceration of the intestine in burns follows upon small haemorrhages in the congested mucous membrane, the congestion being the result of shock and an abnormal collection of blood in the splanchnic area.

Splanchnic Stasis Considered in the Etiology of Gastric Ulcer

In considering the etiology of gastric ulcer we have not sufficiently recognised the important part the nervous system plays in gastric disorders and still less have we considered any circulatory changes in the condition except those in the stomach itself. **We must fully recognise that branches of the coeliac arteries which supply the stomach with blood carry with them nerves from the coeliac plexus, giving a direct connexion with the great sympathetic plexuses in the abdomen. We then realise that any disturbance of these nerves may affect the circulation, not only locally but generally.**

"There is much to be considered about the solar and coeliac plexuses in relation to simple ulcer of the stomach and to nervous distress in the stomach region." - H. G. Sutton, in "Lectures on Pathology," p. 283.

I have shown that a predisposition to gastric disorders is commonly associated with a functional disturbance of the nervous system and tendency to circulatory changes and I have pointed out that the stomach disturbances may arise through prolonged mental influences, irritation of food, or by changes of external temperature, for facts show that there may be a plus amount of blood in the splanchnic area involving the stomach with a diminution in the periphery under each of these influences, I have also shown that with a similar blood displacement in malaria and burns the stomach and bowel are frequently involved.

What I now wish to point out is that such a condition of congestion is liable to be accompanied by haemorrhages into the mucous membrane and sometimes into the submucous tissue which may be the starting points of ulceration.

In the congested stomach mechanically produced in cardiac disease and portal obstruction haemorrhages are found, and the same are common whenever congestion of the stomach is severe.

Fenwick in "Ulcer of the Stomach and Duodenum", p. 95, believes that there is congestion of the stomach at the menstrual periods, accompanied by haemorrhages, and if these are unusually deep and extensive, he thinks that they may be the origin of acute gastric ulceration. But whatever the amount of congestion may be at this time, it is of a temporary character and less likely to be associated with haemorrhages into the mucous or submucous tissue than the congestion of splanchnic stasis which, once established, may last for weeks or months.

It easily follows that some of these haemorrhages may result in abrasions or erosions which may be prevented from healing by the irritation of the gastric secretion, so commonly hyper-acid, and proof is not wanting that the gastric juice does act in an irritating way upon the injured mucous membrane.

For when the oesophagus is seen ulcerated it is generally in that part which comes in contact with the regurgitated acid chyme.

The same applies to the duodenum, which is less often ulcerated in the lower end, where the chyme is alkaline, than near the pylorus, where the chyme is acid.

We conclude, then, that acute ulceration may have its origin in a haemorrhagic erosion, acted upon by the acid secretion of the stomach, and that this may become chronic if steps are not taken to relieve the congestion which has caused the haemorrhage and to prevent its repetition.

In the etiology of many cases of ulcer several causes operate together, some being immediate and some remote.

Oral Sepsis is a Secondary Cause

Oral sepsis has been urged as a cause of ulcer and may be a powerful agent in infecting any haemorrhagic erosion of the mucous membrane and in furthering ulcerative changes.

But I cannot think that micro-organisms from the mouth will infect the mucous membrane of the stomach, unless there is some breach of surface, such as the superficial ulceration seen in chronic catarrh and congestion following hemorrhages, for we see very carious teeth and no gastric ulcer, and, on the other hand, gastric ulcer with no signs whatever of oral sepsis.

Oral sepsis, however, may prove to be an important complication of any circulatory disturbance involving the stomach.

Thrombosis and Anaemia

Virchow thought gastric ulcers originate through embolism or degenerative changes in the arteries arresting the circulation, a condition of infarct being produced and necrotic changes in the mucous membrane.

The slowness of the circulation in the stomach in a state of congestion may favour thrombosis of its vessels but it has been seldom seen post mortem with gastric ulcer, whilst haemorrhages and haemorrhagic erosions are common.

Degeneration of vessels is met with at a later period of life than that in which a majority of cases of gastric ulcer occur but may be the cause of thrombosis and ulcer in older subjects.

Anaemia has been looked upon as an indirect cause of gastric ulcer and undoubtedly we see it in acute as well as in chronic ulcer but in the latter condition it must be considered as partly due to malnutrition.

I am convinced, however, that true anaemia in gastric ulcer is not so commonly seen as what George Oliver in "Blood and Blood Pressure", p. 269 describes as a quasi-anaemic appearance, the result of splanchnic drain, and in the latter condition he says:

> *"The examination of the blood does not. as a rule, support the theory of anaemia, for the proportion of the haemoglobin and of the red discs fall well within the normal limits of variation. The pallid appearance is not due to an impaired quality but to a reduced amount of blood in the vessels."*

Haematemesis of Splanchnic Stasis

I have no doubt that many cases of haematemesis are due to congestion of the mucous membrane of the stomach, part of a splanchnic stasis, no ulceration being present, and Mayo Robson has described two cases he explored and in each a general rather than a local bleeding was found.

Bertrand Dawson in "Brit. Med. Jour.", Vol. II, 1902 has named these cases of

haemorrhagic gastralgia and has pointed out the difficulties of diagnosis from ulcer. Hale White in "The Lancet", 29 June 1901 describes similar cases which he says are not due to ulceration and occur in women chiefly between 30 and 40 years of age.

He makes no mention of any circulatory disturbances having been noticed and I think that probably many of them are due to congestion, part of a splanchnic stasis.

As pointed out by Essex Wynter in "Brit. Med. Jour.", Vol. II, 1902; 80%, of cases of haematemesis occur in young women with hardly a death and haematemesis in the wards of a hospital is a rare occurrence. It is the rest, warmth, and freedom from exposure there which, by relieving the congested condition of the stomach, account for this.

Simple or Atonic Dilatation and Splanchnic Stasis

In taking part in the discussion upon the causes of dilatation of the stomach introduced by Professor T. Clifford Allbutt at Manchester in 1902, I pointed out the disturbance of the circulation commonly seen with gastric dilatation.

More extended observations have shown very great peripheral changes with stomach dilatation, lividity of the extremities having been observed in some cases.

Dilatation may follow upon gastric catarrh, the catarrh being due to some irritant in the stomach, or it may be part of a general neurasthenia produced by mental anxiety, whilst in others the changes in the peripheral circulation are consequent upon exposure and if there is a very sensitive vaso-motor system it would appear to be the disturbing factor.

In all the result is the same: there is too much blood in the splanchnic area and too little in the periphery. Loss of motility in the stomach is succeeded by dilatation and as a result of food fermentation toxins are generated which sometimes create other disturbances shown by vertigo, tetany, and palpitation.

Circulatory Changes in 32 Cases of Gastric and Duodenal Ulcer Operated Upon

The diagnosis of gastric ulcer is not always easy, but in order to satisfy myself that the circulatory disturbances described as found with gastric disorders are present in cases of ulceration, I have investigated this point in 31 cases in which gastric or duodenal ulceration has been proved by operation.

I am indebted to my surgical colleagues at the Royal Halifax Infirmary, past and present, and to Mr. H. Littlewood and Mr. B. G. A. Moynihan of the Leeds Infirmary, who have allowed me to investigate some of their cases operated upon for perforation or gastro-enterostomy.

These consisted of 24 cases of ulcer of the stomach in young females which had perforated, one of gastric ulcer in a male and another in a female, for which gastro-enterostomy had been performed, and 6 duodenal ulcers in men.

In 18 of the 26 gastric cases, the patients described themselves as having been very sensitive to cold all their lives with a poor peripheral circulation; seven stated that the coldness of the extremities and general sensitiveness to cold temperatures had come subsequently to the gastric disorder and that they were normal before, thus suggesting a stomach origin of the circulatory disturbance.

In one case of gastric perforation the patient expressed herself as having been always warm.

Of the 6 duodenal cases 2 expressed themselves as having been always abnormally sensitive to cold and dyspeptic symptoms, but four stated they had been naturally warm until the onset of the gastric trouble.

Practically all would be described as of a nervous temperament and nearly all gave a history of worry, which would affect the gastric circulation through another source already described.

Brinton, years ago, pointed out that there was a history of worry in nearly all of his cases of ulcer. The other striking feature in this analysis is the fact that 20 of the 31 cases gave a history of having had a weak peripheral circulation for the greater part of their life and of being very easily influenced by external temperature.

For the most part they were working people, worried and much exposed in gaining their livelihood: the very life to augment any loss of circulatory balance.

Suggestions in Treatment: The importance of External Warmth

The general lines of treatment of gastric disturbances are familiar to all, but one important consideration as an outcome of this inquiry demands our special attention.

We must not confine ourselves to the stomach only but remember the disturbance of the nervous system and circulation and not only give rest to the stomach but obtain the same for body and mind if possible.

If there is ulceration or dilatation this is best accomplished by placing the patient in bed and by doing so we assist the next point in treatment, which is the restoration of the disturbed circulation.

To accomplish this heat must be applied, by the use of hot bottles, to the feet and other cold parts.

A large amount of blood is thus drawn from the splanchnic area to the limbs and skin surface and a better circulation soon relieves the splanchnic stasis which has produced the congested stomach. As the general condition improves and the circulation becomes more normal, exercise is most helpful. Most patients find out the necessity of warm clothing and apply it to the most sensitive parts and this must be encouraged by us. In the case of gastric dilatation in addition to warmth, washing out of the stomach and anti-fermentative treatment are important.

The importance of recognising symptoms of failure of the peripheral circulation while occurring during the course of gastric disease cannot be over-estimated when we remember that more blood to the congested mucous membrane of the stomach must be detrimental to the healing of an ulcer.

For 6 or 7 years I have treated all cases of gastric disturbance, including chronic catarrh, ulcer, and dilatation, in my wards in this way and I always give the strictest instructions as to the importance of warmth in similar cases when in the outpatient department.

The same treatment must be adopted to counteract the circulatory disorder in the case of chronic ulcer. But when this and other treatment have failed, and being satisfied that the ulcer is chronic, the operation of gastro-enterostomy should be seriously considered, for only then is the ulcer given an opportunity of healing and with the removal of the source of irritation the circulatory disturbance may disappear.

Other local treatment to correct the tendency to splanchnic stasis must be directed to the splanchnic area by means of a well-applied broad bandage or an abdominal belt, which by exercising pressure tends to express blood from this part into the general circulation.

We must also fully recognise that there is a serious loss of nerve tone and endeavour to reinstate it.

In Conclusion

I strongly urge that inasmuch as nearly all or many peripheral vaso-motor disturbances of the circulation may be associated with circulatory disturbance of some organ or organs they should receive more attention at our hands, and that their cause should be investigated and treatment adopted with due appreciation of the value of warmth in remedying the same.

We use very active treatment to restore the circulation in the condition of collapse and shock, but we may be too slow in recognising and treating the lesser disturbances of the peripheral circulation concerned not only in gastric but in other disorders. I only wish that the poor who suffer thus could be taught how much comfort they might obtain and at what a trifling cost by the use of the hot bottle.

The mouth should be examined for carious teeth or other sources of infection in all cases of gastric disorder inasmuch, as already stated, any superficial ulceration of the stomach may become infected by organisms from the mouth and develop into deeper ulceration.

It is equally important to treat anaemia if present, for its existence will hinder any reparative process." - Dr Alfred Mantle, MD, Physician to the Royal Halifax Infirmary, in "The Lancet", 14 April 1906.

Chapter 40

Myofascitis

A Pathological Explanation of Many Apparently Dissimilar Conditions

"Myofascitis is empirically diagnosed and treated under the following headings:

1. Lumbago
2. Sacroiliac strain
3. Sacroiliac relaxation
4. Sciatica
5. Arthritis
6. Strain of lumbar muscles
7. Rheumatism
8. Tennis elbow
9. Glass arm
10. Charley horse
11. Contusion
12. Low back pain
13. Sciatic scoliosis
14. Bursitis
15. Ruptured muscle fibers
16. Toxic wry neck
17. Neuritis or crick of shoulder or neck
18. Flat feet, (particularly the juvenile type)

Because its local symptoms closely resemble those of the conditions just listed, it has successfully masqueraded under these diagnoses for years by concentrating the physician's attention on these local or secondary manifestations, usually deemed orthopedic in nature, **rather than upon the underlying cause: Toxicity of the Blood."** - Dr Fred H. Albee, MD, FACS, in "American Journal of Surgery", January 1934.

Glass Arms

"Outfielders who acquire Glass Arms soon drift to minor league teams even though they may have retained all of their playing ability with the exception of the throw." - Dr Vance, MD in "The Louisville Monthly Journal of Medicine and Surgery", Vol.21, 1925.

Charley-Horse

"During my connection with the Louisville Baseball Club in the capacity of surgeon, I saw quite a few of these cases. A "Glass arm" is different from a so-called "Charley-horse." In the latter, the individual has no trouble as long as he is working and the arm is warm, but if he has to rest for any length of time between innings, when he goes back into the box he feels a soreness which wears off after he has pitched 8 or 10 balls. However, after pitching a game, these patients sometimes suffer intensely, almost demanding an opiate.

A "Charley-horse", so-called, is a knotting of the muscles on the inside of the thigh, and it is due to nerve trouble."- Dr Geo. C. Leachman, MD in "The Louisville Monthly Journal of Medicine and Surgery", Vol. 21, 1925.

Myofascitis

"Myofascitis is a local manifestation of a Toxic condition of the Blood, evidenced by low grade inflammation or toxic involvement of the muscles and fasciae, the symptoms predominating at the fascial insertions of muscle to bone.

Pull or traction on these sensitive fascial insertions produces marked symptoms, out of all proportion to the degree of inflammation that is evident clinically.

In 20 years of practice I have been increasingly impressed by the large number of persistent cases of: low back pain, lumbago, sacroiliac strain or relaxation, sciatica, strain of the lumbar muscles, or muscular rheumatism, and also certain cases of Tennis Elbow and of Weak or Flat Foot that are referred to me for differential diagnosis and relief, in which treatment based only on these various local diagnoses had proved singularly unsuccessful.

In a large number of cases the diagnosis was empirical, the true pathological condition being toxic absorption, usually from the colon, with local manifestations in the muscles and fasciae, particularly at the fascial insertions of muscles to bone.

Treatment based on this conception was begun 5 years ago, and the results have been so good in a large number of cases that I suggest the introduction of the term "myofascitis".

The compound word seems desirable in that the symptoms are so combined that both muscles and fasciae are affected.

That medical terminology, already cumbersome, should not be unnecessarily increased is axiomatic.

The introduction of this term, myofascitis, is therefore made only after careful deliberation and the conviction that it simplifies rather than complicates our diagnostic armamentarium, and points the way to one definite general line of treatment, supplemental to orthopedic indications, instead of a multiplicity of methods yielding unsatisfactory results.

It clearly describes a clinical entity which has hitherto been empirically classified under such varied terms as those listed above, because there was no term in the accepted nomenclature which actually described it.

At least 90% of the cases of "low back pain", "lumbago", "sacroiliac strain" and "sciatica" that are referred to me under these diagnoses are, on more comprehensive analysis, instances of myofascitis; and certain cases of the latter condition produce many of the symptoms of Flat Foot and Tennis Elbow.

It therefore seems highly desirable from the standpoint of both patient and physician that a definite line be drawn between true sciatica, true sacroiliac relaxations, etc., and cases of myofascitis which simulate these conditions.

The recognition of myofascitis as a clinical entity will not only result in the cure of cases that have been persistently resistant to treatment but, by eliminating the large number of pseudo-sacroiliac strains, etc., it will give us a more correct conception of the prognosis for these conditions because it will be based on exact pathology.

Toxic Absorption from the Colon the Underlying Factor

The theory on which I worked in studying the problem was that the condition was primarily due to toxic absorption, usually from the colon, with clinical manifestations at the fascial insertions of muscles. I first examined the patients for toxic absorption from teeth, sinuses or tonsils, attention being given to anything outside the colon that might contribute to the symptoms. But the total of such foci was only approximately 10%, whereas about 90% of the patients had symptoms referable to the colon: Headaches, Constipation, and other signs of toxicity.

I had the faecal matter examined thoroughly and found that the normal gramnegative flora were reduced in number, in several cases to as low as 30%, whereas the proportion of gram-positive flora was markedly increased.

The abnormal chemical, histamin, was present in variable amounts.

Histamin is regarded as a pathological end-product and shows that intestinal disturbance has gone on to a point where it may endanger any portion of the body from the toxic standpoint.

Hashimoto of the Mayo Clinic has made a valuable study of the production of this chemical in the colon, and its effects upon the systemic circulation.

In many cases a considerable residue of cellulose or protein formic acid was noted, and the stool proved acid to all indicators. Instead of B. coli predominating as it does normally, and thus checking the growth of pathogenic bacteria, a very small percentage of this organism was present. From the bacteriologic standpoint, Hiss and Zinsser have shown that the function of B. coli in the intestine is not inconsiderable, if only because of its possible antagonism to certain putrefactive bacteria. The slowing up of peristalsis may be a chronic condition due to sedentary occupations and lack of exercise, with a tendency to flatulence and distention; or it may be that trauma or accident has suddenly imposed inactivity upon an active person used to laborious work, and this inactivity has led to **intestinal stasis**, although the trauma did not directly involve the part to which pain is referred.

Suffice it to say that the laboratory work on the faeces confirmed the opinion **that toxic absorption in the colon was the important factor in producing the clinical picture.**

We have long known that absorption from an infected tooth may produce marked symptoms at various joints. Indeed, symptoms have been known to subside within 48 hours after the removal of such teeth. Yet, if we consider the possible areas for absorption in the body, the colon certainly offers one of far greater extent, approximately 500 square inches.

The fact that the surface is not smooth, but is filled with diverticula and haustra, which by harbouring inspissated faeces court infection, is also significant.

The peculiar settling of the toxins in the fascial insertions may be partly due to diminished circulation in a large number of terminal capillaries in these locations.

Clinical Findings

The inflammatory or toxic involvement is usually low grade. Indeed it is surprising that from an ordinary clinical examination more cannot be found in the way of edema or exudate as evidenced by the increase of diameters, which is rarely noted.

Occasionally in a very muscular individual the hamstring muscles in severe cases have been found to be extremely sensitive to palpation, and with a series of swellings or so-called "knots" extending from the tuberosity of the ischium to the popliteal space, necessitating constant recumbency.

These cases are, however, in the minority.

By all means the most frequent location of pain is the lower back, where there are so many fascial insertions into bone. It may be vague or definite, and related to the spine, sacrum, or posterior wing of the ilium.

Other myofascial insertions may be sensitive to touch or tension, as the patella, the point at which the tendo Achillis is attached to the os calcis, and also at the epicondyles of the humerus.

Difficulty in completely immobilizing the lumbar spine and preventing pull upon the fascial insertions and muscles accounts for the very troublesome and persistent symptoms in this region.

Certain patients complained of pain in the region of the sacroiliac joint, and had been treated for relaxation of this joint.

The diagnosis had been considered confirmed because immobilization, such as strapping, or application of a belt or cast, afforded temporary relief.

But recurrence of pain developed in connection with a return of focal infection or gastrointestinal disturbance. A few cases had even been referred for operation.

In practically every such case of low back pain, flexion of the hip, followed by extension of the knee, caused tension and resultant acute pain at the insertion of the fasciae and muscles into the bony structures in the region of the sacroiliac joint.

I have called this the myofascitis sign.

These structures are at the crossroads of the trunk and thighs; they are pulled upon by the most powerful muscles in the body, and are on more or less tension most of the time.

Slight toxic irritation or inflammation will therefore cause considerable pain and discomfort.

Although in cases of low back pain, the latter may seem to be in the sacroiliac joint, upon more careful study it is usually- found to be more widely distributed in the surrounding structures.

"Sacroiliac-strain", a diagnosis formerly made not infrequently by myself, and still frequently made by others, I find, produces symptoms that are widely distributed outside this joint, a fact which is not consistent with actual joint strain.

Although from palpation alone it is practically impossible, because of the anatomic position of the joint beneath the posterior wing of the ilium and the deep overlying structures, to be certain whether the pain is from pressure on the joint itself or on the fascial insertions of muscles into the surrounding bony structures, a careful analysis of symptoms leads one to the latter conclusion, and the results of treatment based upon this conclusion support it more definitely than any theoretical considerations.

If there is sensitiveness to deep pressure over the fasciae or muscles in the region of the posterior superior spine of the ilium, posterior surface of the sacrum, over the gluteal fascia, and along the fascia lata on the outer aspect of the thigh, the case is one of myofascitis, and not sacroiliac strain.

In certain instances this sensitiveness extends from the outer side of the leg to the region of the external malleolus.

From repeated examination I feel that true sciatica is also extremely rare, and that many cases clinically called sciatica are myofascitis.

The wide distribution of sensitive areas noted on palpation is not in accordance with the location of the nerve trunk and its branches, but rather with that of the fasciae.

As in the case of sacroiliac strain, the most sensitive areas are found to be at or near fascial insertions to bone.

Histories in these cases, if taken carefully, frequently reveal other evidences of toxic absorption, such as remote or intermittent headaches, vague attacks of pain, a crick in the neck, or treatment for lumbago on one or several occasions.

These attacks have been associated with or have followed some slight exertion, such as lifting a pail of water or a brief case, or swinging a golf stick.

The pains have shifted from one region to another, depending on what was the exciting factor.

Particularly in accident cases I observed that patients complained of vague pains at sites of presumed injury, although no actual injury was found on close examination.

Careful examination and history revealed that the patient had for some time been a victim of toxic absorption from the colon, and that the muscles and fasciae were so affected by this toxicity that comparatively slight injury had produced symptoms out of all proportion to the degree of trauma. One such patient, a strong, robust man, lifted a heavy roll of paper, felt pain in the lumbosacral region, and went to bed for 5 days, then continued unable to work.

The company paid for his idleness for 2 years, after which he was referred to me. **Treated for Myofascitis, and the toxicity of the colon cleared up, he was readily cured.**

Treatment

If a focus of infection other than the colon has been demonstrated, such as apical abscesses or tonsils.

But for the remaining 90% of cases in which the toxic absorption is from the colon, surgical eradication is certainly not to be advised lightly, and the following treatment renders it, in a very large percentage of cases, unnecessary.

It also markedly diminishes the duration of mechanical treatment for the local orthopedic manifestations, and in some cases, seen early, eliminates mechanical treatment entirely.

Colonic Treatment

The colon is treated with medicated lavage; B. coli implantations are made; and a low-residue diet is prescribed which prevents carbohydrates from reaching the colon in undigested form, as their presence is known to favour toxic conditions.

As Finker and von Wassermann believe that autointoxication is the result of bacterial activity on certain sugars; elimination of the offending sugar from the diet may be beneficial.

Laboratory examination of the stool will reveal which sugar is the most active bacteriologically for a given patient, and this sugar should be eliminated from his diet.

To forestall any possibility of residue protein reaching the colon undigested, or bringing with it partially digested carbohydrates and liberating them in the colon, proteins and meats are taken only in moderate quantities, and the importance of thorough mastication is impressed on the patient.

The work of Kellogg at the Battle Creek Sanatorium has taught us much regarding the relation of diet and the action of the colon, and the influence of the colon upon health.

To help to restore the alkaline balance, 15 grains each of calcined magnesia and calcium lactate are given in water after eating, 3 times daily.

Milk of magnesia powders are also given as necessary to relieve constipation.

The medicated Colonic Lavage is given daily by the following technique, which is very important: the patient is placed upon the left side with the buttock elevated on 2 pillows.

The reservoir (holding 2 quarts) is elevated not more than 18 inches above the patient, in order that peristalsis may not be unduly stimulated and an involuntary effort to expulsion of the fluid thus interfere with the treatment.

A low Enema of 500ml of lukewarm water is first given to clear out all faeces from the extreme lower portion of the colon.

After this has been fully expelled, a second Lavage of warm water is allowed to flow slowly in; this will usually take about 10 minutes.

With the buttock still elevated, the patient then lies upon his back, with the thighs extended, for a period of 2 or 3 minutes, then on the right side with the buttocks still elevated for an additional 2 or 3 minutes, to permit the solution to flow as much as possible into the ascending colon and cecum.

He is then allowed to expel all this fluid.

This expulsion will be hastened by walking a little, and will consume from ten to 15 minutes.

The patient then takes the same position on the treatment table as before, and 1 dr. of sodium carbonate monohydrated, dissolved in 2 qts. of lukewarm water is allowed to flow into the colon in precisely the same manner as the calcium lactate solution, but is retained a few minutes longer than the previous lavage.

The treatment should be continued daily until the last fluid comes away without much mucus.

The case is then ready for colon bacilli implantations. Some cases will do well without them, and the implantations are therefore not given routinely; but it has been found that in most cases their action contributes definitely to the relief of symptoms.

The cultures should be obtained fresh from the laboratory and used within 4 hours.

Table I

Variety of Previous Diagnoses and Treatment in Cases of Myofascitis

Previous Diagnosis	**Previous Treatment (without relief)**
Lumbago	Massage, Baking, Electrotherapy, Osteopathy, Chiropractic, Salicylates, Atophan
Sacroiliac strain or relaxation	Casts, stretching, manipulation, open operation
Sciatica	Injections into nerves, stretching, salicylates
Arthritis	Open operation, electricity, salicylates, thymus
Strain of lumbar muscles	Casts, internal medicine
Rheumatism	Internal medicine, baking
Tennis elbow	Palliatives
Myositis	Salicylates, massage
Intestinal ptosis	Typhoid inoculations, ointment
Contusion	Strapping, massage, baking
Pelvic twist	Palliatives
Knee-twist	Bandage and ointments
Flat feet	Plates

Diet: Careful attention is given to the diet, eliminating whatever sugar is found by examination of the faeces to be particularly active bacteriologically for the

patient, and restricting proteins and meats to moderate quantities, with attention to thorough mastication.

Results

Striking has been the relief of symptoms when the colonic function has been returned to normal in cases that have persistently resisted mechanical treatment. Patients who have adhered to the above regime have been entirely relieved of symptoms that were in many instances chronic, and have discarded immobilization apparatus in cases in which this had previously been worn.

The only recurrences have been in cases in which the colonic function was again allowed to become deranged, and these have usually responded promptly to treatment.

Certain cases of persistent tennis elbow, treated constitutionally by removal of toxic absorption, particularly from the colon, and locally by deep massage, improved rapidly.

Local treatment alone in these cases had been slow and unsatisfactory, or entirely unsuccessful.

Other Orthopedic conditions, such as certain cases of weak or flat foot, have likewise definitely improved only after relief of the toxic etiologic factor.

I have found many cases of so-called sacroiliac strain to be in reality myofascitis (Table III).

In addition to the 142 cases on which this paper is based, I have seen over 100 in consultation in which the diagnosis of myofascitis was made.

The requiremerits of diagnosis have, however, been met in more than 250 cases.

Table II

Degree of Improvement in 40 Illustrative Cases of Myofascitis Treated by Medicated Colonic Lavage, Cultures and Diet

Case	Condition	No. B. coli cultures	No. Colonic Irrigations	Total Time for both	Result
I	Flat Feet	10	7	24 days	Excellent
II	Infected Tooth	10	7	20 days	Excellent
III	None	16	7	36 days	Excellent
IV	None	5	10	45 days	Excellent
V	Osteoarthritis	10	10	25 days	Good
VI	None	10	10	30 days	Excellent
VII	None	10	20	37 days	Good
VIII	None	2	14	15 days	Good
IX	None	4	7	14 days	Excellent
X	None	9	7	30 days	Good
XI	None	10	10	30 days	Excellent
XII	Bunions and Flat Feet	none	4	6 days	Excellent
XIII	None	10	6	33 days	Excellent
XIV	Flat Feet	10	7	23 days	Excellent
XV	None	10	7	32 days	Excellent
XVI	None	10	10	21 days	Good
XVII	None	10	29	3 months	Good
XVIII	Arthritis (?)	8	7	67 days	Good
XIX	Flat Feet	13	8	30 days	Good
XX	None	12	7	27 days	Fair *
XXI	None	12	10	11 months	Good
XXII	Weak Feet	10	10	3 months	Excellent
XXIII	None	3	7	12 days	Excellent
XXIV	Flat feet	10	7	32 days	Good
XXV	None	10	10	35 days	Good
XXVI	None	10	5	28 days	Excellent
XXVII	None	16	7	3 months	Good
XXVIII	Flat feet	5	7	2 weeks	Fair *
XXIX	Loose Semilunar Cartilage; Flat Feet	9	7	18 days	Excellent
XXX	Spina Bifida	10	15	2 months	Excellent

XXXI	None	10	7	1 month	Good
XXXII	None	10	13	20 days	Excellent
XXXIII	None	8	8	3 weeks	Good
XXXIV	Metatarsalgia	7	8	2 weeks	Good
XXXV	Flat feet	11	7	4 weeks	Excellent
XXXVI	Weak left Foot	0	4	3 weeks	Good
XXXVII	Weak Feet and Metatarsalgia	0	5	1 week	Improved treatment just begun
XXXVIII	Flat Feet	2	12	3 months	Excellent
XXXIX	Sacroiliac Strain	13	22	6 months - Excellent, marked improvement after 4 treatments	
XL	Referred for operation	12	10	5 Weeks	Excellent

* Careless of diet; not faithful to treatment.

Illustrative Cases

Case I. Typical acute case. A hard-working man, aged 48, who had been an athlete at college, had gained weight soon after starting in business. His work necessitated considerable standing, and he had developed pronounced Hat feet, which were very painful. A week before the patient was seen by me, he had been much overworked, and had a general pharyngitis. From the posterior pharyngeal wall, which was slightly edematous, there was secured a pure culture of Streptococcus hemolyticus. This pharyngitis was immediately followed by sudden and severe pain in the left lumbar region, loin, and upper posterior part of the thigh, for relief of which he consulted me.

Gastrointestinal history: For about 5 years the patient had had much stomach trouble, evidenced by pain coming on about two hours after meals, and relieved by large doses of bicarbonate of soda. This was also associated with constipation and flatulent stools.

Examination: There was extreme sensitiveness over the posterior part of the thigh, which upon casual examination would certainly have been considered due to pressure upon the sciatic trunk. But more careful questioning and examination revealed the fact that the pain was over the fascia of the posterior outer side of the thigh, radiating to the outer side below the knee, and reaching almost to the ankle. With the patient in the dorsal position upon the examining table, with the knee extended, any attempt to flex the hip was associated with complaint of severe pain in the lumbar and posterior thigh region. With the patient on the right side an attempt to adduct the left leg was associated with pain in the outer posterior part of the upper thigh, apparently due to tension on the fasciae lata.

In the past history of this case, following excessive use of the hammer in driving

heavy nails (work to which the individual was entirely unaccustomed), marked sensitiveness had developed over the external epicondyle of the right humerus which the patient localized as the exact location of the ordinary tennis elbow. This had taken 3 months to subside.

Stool Examination: Histamin 4 (scale of 1 to 5). Acid to all indicators. This accounted for the toxic absorption resulting in myofascitis.

The patient was given medicated colonic lavage daily for 12 days, and his diet was regulated. The acute symptoms subsided. At the end of 4 weeks he was able to resume work, but was instructed to continue the diet. At the end of 2 years he is still free from myofascitis.

Case II. H. F. was seen in my office Dec. 8, 1925. His chief complaint was pain in both feet, worse when bearing weight, as in walking. The pain had started suddenly in the balls of the feet 6 months before, and had persisted, gradually increasing. He had "gas on the stomach," but was not constipated. Previous treatment had included medication by mouth, strapping, plates, proper shoes, rest and exercise. Two teeth had been extracted, one of which proved badly diseased.

Examination: Pain in the muscles of the calf on dorsiflexion of the foot; flat feet. Roentgen-ray examination showed moderate enlargement and spur formation at the os calcis. Blood examination, negative.

Stool Examination: Marked acidity. Histamin, 5 + . Oxalic acid present.

Treatment: His diet was regulated in accordance with the laboratory findings. 7 Colonic Treatments and 10 cultures were given between December 14, 1925 and January 8, 1926. The feet were strapped, and fitted to plates, and pads placed under the heel. Medication by mouth. The patient returned to the office 15 June 1926, absolutely cured.

Comment: In this case, the toxic condition of a muscle was the direct cause of the muscle spasm. By first offsetting the acid condition of the colon and then applying properly fitted plates, a complete cure was attained.

Case III. An interesting case is of a man of 45. He suffered pain most of the time in the right sacroiliac region and down the right leg. The family physician had treated him for sciatic rheumatism, with baking and electric treatments. The pain was worse at night, but even in the daytime was so severe as to render walking most difficult. 15 years before, he had had lumbago. He had no headaches, fever, or spasms.

In addition to the baking and electric treatments, he had received medication, and had worn a corset brace. His condition progressed, and seemed so serious that an able orthopedic surgeon referred him to me for a sacroiliac fusion.

When the patient came in he was apparently very ill, but I did not believe that operation was justified. I made a diagnosis of myofascitis, and instituted treatment accordingly. Following the second colonic irrigation marked improvement was noted. One month later the patient made the statement that he felt well.

Two months later there was slight tenderness over the external epicondyle on the right arm, also of the left subdeltoid bursa. The medicated colonic lavage was therefore resumed, and the diet continued. When last seen, in October, 1926, the patient was having only slight and occasional pain.

Comment: Although this case presented no symptoms referable to the gastrointestinal tract. treatment directed to the colon as a focus of toxic absorption proved very effective, and showed that operation would have been unwarranted.

Case V. - Mrs. C. E. D., a middle-aged woman, had had her first attack of "left sacroiliac strain", 10 years ago, followed by the usual orthopedic brace treatment. Later, under an anesthetic in one of the large eastern orthopedic clinics, stretching as practised for this complaint was done by a prominent orthopedic surgeon. A Knight brace was then applied, and worn for several months. The trouble recurred, and the stretching was repeated by the same surgeon in 1921. In 1924 a nerve in the lumbosacral region was injected with saline solution. As the relief lasted only about 48 hours, 2 days afterwards stretching under a general anesthetic was again done. This afforded relief, but the symptoms recurred in January 1925. Stretching was then repeated by the same surgeon who had treated the patient in 1916 and in 1921. Afterwards a Spencer corset brace was applied. Tonsils and several teeth had been removed several years before my examination.

Shortly before I saw her, the patient was in an automobile accident and sustained multiple bruises, more particularly a scalp wound. She went to bed and was very nervous, but had no symptoms of her old, so-called "sacroiliac relaxation" until 3 days after the accident. She then complained of pain in the left lumbosacral region, extending down the thigh and outer surface of the leg to the region of the ankle. When I examined her, she was in bed, lying with the lumbosacral region upon an electric pad which she said had always given her relief. She further stated that she was feeling wretched all over, so much so that she was in bed as much for her general condition as for the condition in the lumbosacral region and thigh.

Examination: Deep palpation elicited sensitiveness over the posterior part of the sacrum on the left side. Turning in bed caused pain. The patient could lie more comfortably on the right side. Mesially to the posterior superior spine of the ilium there was sensitiveness to pressure over the outer surface of the thigh, and this extended to just above the ankle.

This sensitiveness was over the fascia lata and muscles underlying. Deep pressure over the sciatic trunk failed to evoke any sensitiveness.

The knee jerks were normal; there was no ankle clonus and no phenomenon; flexion of the hips with the knees flexed was normal, but flexion of the right hip with the knee extended caused pain in the lumbosacral region when reaching the right angle.

On the left side, the same test produced more severe pain before reaching a right angle, and the pain was referred from the lumbosacral region along the posterior part of the thigh.

Questioning elicited the fact that the patient had long been subject to headaches, malaise, and constipation.

Shock had disturbed this patient's gastrointestinal metabolism, which was already faulty. For purposes of discussion, let us grant the diagnosis, made elsewhere, of sacroiliac strain, flow can one explain the general symptoms of feeling wretched all over (which could not be attributed directly to the accident, as they had accompanied previous attacks), and the wide distribution of the findings, extending from the posterior part of the sacrum nearly to the ankle on the left side, and the pain upon stretching of the muscles and fascia of the right side when the hip was flexed and the knee extended? What relationship could there be between the sacroiliac joint on the left side and these complaints?

If, however, we grant the diagnosis of myofascitis, of colonic origin, the entire symptom-complex is easily explained, as well as the past history. The stretching under an anesthetic in such cases often gives relief, temporarily, for the simple reason that the adhesions coincident with the toxicity of fasciae and muscle insertions are stretched or broken down, and the formerly toxic muscles are stretched and ironed out.

The general malaise or wretched feeling of the patient could not be explained by any other hypothesis, especially since it had been associated with all former attacks. The generalized symptoms occurred in both extremities and extended on the left side from the lumbosacral region to the lower leg. I prescribed treatment directed against the toxicity of the colon, as previously outlined, and the case has done unusually well.

Sacroiliac Strain and Relaxation

At the present time a very large number of cases are diagnosed as "sacroiliac strain or relaxation," and treatment of great variety is instituted for them. This includes strapping, belts and braces, massage, casts, and even sacroiliac fusion. I believe that in many instances the condition is really myofascitis of toxic origin.

Symphysiotomy, pubiotomy, fracture of the pelvic girdle, all necessarily strain or separate the sacroiliac joint to a far greater degree than could possibly result from the trifling injuries that are considered competent to produce sacroiliac strain, yet in my experience with a large number of such cases, symptoms referred to the sacroiliac region are notably lacking.

The purpose of mentioning the above cases is not an attempt to prove that sacroiliac relaxation or strain never exists, but to build up an argument that too much significance has been given to this train of thought with a consequent and unfortunate submerging of the toxic conception.

It should be realized that it is most difficult to bring pressure to bear upon the sacroiliac joint because of its lying beneath the posterior wing of the ilium, which shelves over it to a considerable degree toward the mesial side of the joint. Moreover, the posterior ligament and capsule of the sacroiliac joint are extremely thick and held in more or less tension between its insertion on the posterior wing of the ilium and sacrum.

Since recognizing the clinical entity, myofascitis, and establishing a rational treatment for it, numerous sacroiliac braces and corsets have been found unnecessary, the patients being either completely relieved of their "sacroiliac symptoms" by the elimination of toxic absorption, or so considerably improved that they would not consider resuming the braces (Table III).

Table III

Persistent Cases of "Sacroiliac Strain", Relieved Following Treatment for Myofascitis

Previous Diagnosis	Previous Treatment	Result of Previous Treatment	Result of Treatment for Myofascitis
Case I Sacroiliac strain	Corset brace; baking; electric treatment; medication	Condition progressing; referred to author for operation	Excellent; Brace discarded No operation
Case II Sacroiliac strain	Strapping; baking; massage; circular cast; Taylor brace; double spica	Unrelieved	Excellent Brace discarded
Case III Sacroiliac strain	X-rays; corset brace; sacroiliac belt	Slight relief	Excellent Belt and brace discarded
Case IV Sacroiliac strain	Sacroiliac belt; medicine; osteopathy; baking; operation considered	Unrelieved	Excellent Brace discarded
Case V Sacroiliac strain	Brace	Unrelieved	Good Brace discarded
Case VI Sacroiliac strain	Corset brace; plates	Unrelieved	Excellent Brace discarded

If the toxic case is very severe, relief of tension upon the insertions of fasciae and muscles can be quickly brought about during the earl y stages of the colonic treatment by strapping with adhesive plaster, precisely as has been carried out in the past for so-called sacroiliac relaxations, and this is recommended.

The important point is that this is merely temporary palliative treatment, and becomes quite unnecessary as soon as the primary colonic treatment takes effect; whereas strapping instituted as the sole means of treatment is either entirely ineffective, or at best temporarily palliative.

The fact that stretching (lumbar roll) has given permanent or temporary relief in cases of myofascitis erroneously diagnosed as sacroiliac strain has led to a misinterpretation on the part of the attending surgeon that the stretchings had relieved the symptoms because of the mechanical readjustment of the sacroiliac joint. (See Case V)

In the light of ray observations it is evident that this is not the cause of relief.

Rather, manipulation has stretched sensitive fascial structures formerly toxic, and thus relieved the symptoms until the toxic condition recurred.

Working on the premise of myofascitis attendant upon toxic absorption, it is surprising how consistently many baffling cases work out, and are cured, particularly those of low back pain." - Dr Fred H. Albee, MD, FACS in "The American Journal of Surgery", 1927.

Myofascitis from an Orthopedic Standpoint

"Myofascitis is a local manifestation of a toxic condition of the blood, evidenced by low grade inflammation or toxic involvement of the muscles and fasciae, the symptoms predominating at the fascial insertions of muscle to bone.

Since the symptoms are so combined that both muscles and fasciae are affected, the compound term seems most descriptive.

In a large percentage of instances it is practically synonymous with the following diagnoses as made by many eminent men in the profession: sacro-iliac strain or relaxation, lumbago, sciatica, and muscular rheumatism, which conditions are merely simulated, and empiric diagnoses made as a result of centering the attention on local symptoms.

In 90% of cases of Myofascitis the toxic absorption is primarily from the colon; in the remaining 10%, from teeth, tonsils, sinuses and gallbladder, often with secondary toxicity of the colon or the genitourinary tract.

Between the real traumatic lesion, for which there are usually definite diagnostic criteria, and the case of neurosis malingering which, in industrial cases, may be designated as "compensitis" there is a large group of backaches and pains attributed by the patient to some past injury, usually slight, but in which neither clinical nor x-ray examination reveals any lesion of the spine or sacro-iliac joint.

It is in this type of case that the patient often "shops around" from one orthopedist to another in an effort to discover the true origin of the symptoms.

The fasciai insertions of muscle to bone become particularly hypersensitive.

Pull or traction on these sensitive fasciai insertions produces marked symptoms, out of all proportion to the degree of inflammation that is evident clinically, which often mislead the patient into believing he has sustained an actual traumatic lesion, if there is anything in his history to suggest it.

This is particularly true if the onset of symptoms is explosive, as in cases of so-called lumbago.

The local manifestations of subacute or chronic myofascitis are usually orthopedic in nature, and are therefore rarely seen by medical men except in very acute cases.

Perhaps this partially accounts for the fact that the "lazy colon", as Campbell and Detwiller have so aptly described it, is so often overlooked, for the surgeon may be more prone than the internist would be to accept the patient's statement that he is not constipated.

I have found that such assurance may be entirely contradicted by observations of the stool. As has already been indicated, symptoms of traumatic lesions of the lumbosacral spine are often simulated.

Local symptoms repeatedly varied within wide limits in accordance with the colonic function.

Free evacuation of well formed stools would be followed by temporary diminution of local symptoms, and failure of satisfactory evacuation, with the stool soft and associated with flatulence, by exacerbation of local symptoms.

I therefore had the faecal matter examined thoroughly in all cases in which myofascitis was suspected, or which had failed to respond to treatment under the empiric diagnoses mentioned, and found that in 90% of the cases the normal gram-negative flora were reduced in number, in several cases to as low as 30%, whereas the proportion of gram-positive flora was markedly increased.

Histamine was present in variable large amounts.

Histamine in large quantities is regarded as a pathologic end-product and shows that intestinal disturbance has gone on to a point at which it may endanger any portion of the body from the toxic standpoint.

Hashimoto of the Mayo Clinic has made a valuable study of the production of this chemical in the colon, and its effects on the systemic circulation.

Irrespective of the laboratory observations of Koessler and Hanks that histamine may be given to animals in large doses by mouth without any appreciable pharmacologie effect, I believe that large quantities of this amine in the stools of human beings are indicative of some pathologic condition, particularly as such observations have in my patients been coincident with an abnormal amount of mucus in the stool, and also with the clinical finding of constipation.

Longcope considers it highly probable that histamine may be absorbed from the intestine and cause disturbances not only of nitrogenous catabolism but also of renal function. **In many cases a considerable residue of cellulose or protein formic acid was noted, and the stool proved acid to all indicators.**

Instead of B. coli predominating as it does normally, and thus checking the growth of pathogenic bacteria, a very small percentage of this organism was present. From the bactériologie standpoint, Hiss and Zinsser have shown that the function of B. coli in the intestine is not inconsiderable, if only because of its possible antagonism to certain putrefactive bacteria.

The slowing up of peristalsis may be a chronic condition due to sedentary occupations and lack of exercise, with a tendency to flatulence and distention; or it may be that trauma or accident has suddenly imposed inactivity on an active person used to laborious work, and this inactivity has led to intestinal stasis, although the trauma did not directly involve the part to which pain is referred.

It has long been known that absorption from an infected tooth may produce marked symptoms at various joints or fasciai insertions or both.

Indeed, symptoms have been known to subside within 48 hours after the removal of such teeth.

Yet, given a case of oral infection, whether teeth, tonsil or sinus, it does not follow that that is the sole location of toxic absorption, for the swallowing of the discharges from oral infection has in many instances caused infection of the lower bowel or colon, and this may have become the source of an extremely large percentage of toxic absorption by the time the tooth is pulled, the tonsil removed, or the sinus overcome.

It must follow that in such cases the colon requires at least equal attention with the original primary source if the toxic absorption is to be really eradicated.

At least stool examinations must be made to determine this.

In 50 consecutive unselected cases of myofascitis 26 patients had had tonsillectomy, cholecystectomy, appendectomy or the extraction of teeth, followed by temporary relief, but with subsequent return and chronicity of symptoms, owing to the fact that the toxic absorption from the colon had been overlooked.

If the possible areas for absorption in the body are considered, the colon certainly offers one of far greater extent, approximately 500 square inches.

The fact that the surface is not smooth but is filled with diverticula and haustra, which by harbouring inspissated faeces court infection and toxic absorption, is also significant. The peculiar settling of the toxins in the fasciai insertions may be partly due to diminished circulation in a large number of terminal capillaries in these locations.

I have treated 164 cases of myofascitis to date and have referred more than 100 back to the attending physician for treatment after making the diagnosis, a total of approximately 275 cases which have been personally examined by me.

Symptoms and Diagnosis

The main diagnostic sign of myofascitis is pain at bony insertions elicited by tension on the involved muscle or fascia, brought about in examination by limb posture.

If it is a case of low back pain, in practically every case flexion of the hip, with extension of the knee, causes tension and resultant acute pain at the insertion of the fasciae and muscles into the bony structures in the region of the sacro-iliac joint.

In like manner, flexion of the spine with hips and loins in extension produces the same sign. This I have called the myofascitis sign.

The pain may radiate down the limb, and palpation locates it in the fasciae.

Pathologic examination, shows chronic inflammation. This corroborates our assumption as to the reason for the local orthopedic symptoms. The pathologist's report in a typical case reads as follows: Gross. - Specimen measures 23 by 13 by 8 mm. It is firm and dark grey. The cut surface is fibrous with minute areas of hemorrhage near one edge.

Microscopic: The various sections show a thickened epidermis with marked rete pegs. Cornification is slight. The subcutaneous tissues are fibrous, containing a few sweat glands here and there. There is a diffuse as well as perivascular infiltration of plasma cells. A few small round cells and polymorphonuclear leukocytes are likewise present.

Diagnosis: Chronic inflammation. Occasionally, induration of the affected muscles is clinically evident. Permanent shortening may develop in the hamstrings and calf muscles in cases of long continued myofascitis of marked severity.

In such cases the stretching and massage of the muscles, carried out at the same time the colonic treatments are being given, is usually effective. Long continued myofascitis, affecting the gastrocnemius and soleus muscle with coincident muscle spasm, and the foot in equinus position, may occasionally lead to such a degree of permanent shortening that operative lengthening of the Achilles tendon becomes necessary. Such cases are, however, rare. Undoubtedly, the shortening of the Achilles tendon is persistent and long continued cases of pes planus may be explained in this way.

Evidence of a focus of infection or origin of toxic absorption, such as an infected tooth or tonsils, or colitis is usually found.

Constipation may be admitted or denied, but stool examination almost invariably will show an unhealthy toxic condition of the colon.

In many cases there will be a history of tonsillectomy, cholecystectomy, appendectomy or the extraction of teeth, followed by temporary relief, but with subsequent return and chronicity of symptoms, the secondary toxicity of the colon because of metastatic involvement from the upper intestinal tract (including the oral cavity) having been overlooked and allowed to become chronic.

Sacro-Iliac Strain and Relaxation

At the present time a very large number of cases are diagnosed as “sacro-iliac strain or relaxation”, and treatment of great variety is instituted for them.

This includes strapping, belts and braces, massage, casts, and even sacro-iliac fusion. In the light of the observations recorded in this paper, I believe that in many instances the condition is really myofascitis of toxic Symphysiotomy, origin pubiotomy and fracture of the pelvic girdle all necessarily strain or separate the sacro-iliac joint to a far greater degree than could possibly result from the trifling injuries that are considered competent to produce sacro-iliac strain; yet, in my experience with a large number of such cases, symptoms referred to the sacro-iliac region have been notably lacking.

Treatment

Treatment of myofascitis is directed primarily at the removal of the toxic absorption, particularly from the colon, and secondarily to the local manifestations.

Such treatment has during the last 5 years yielded excellent results in a large series of cases which had been singularly resistant to a great variety of treatment elsewhere, directed primarily at the local manifestations.

Colonic Treatment: The colon is treated with medicated lavage, E. coli implantations are made, and a low-residue diet is prescribed which prevents carbohydrates from reaching the colon in undigested form, as their presence is known to favour toxic conditions. As Finker and von Wassermann believe that autointoxication is the result of bacterial activity on certain sugars, elimination of the offending sugar from the diet may be beneficial.

Colonic Lavage is given daily for about 10 days. The patient is then ready for colon bacilli implantations. Some patients will do well without them, and the implantations are therefore not given as a routine; but it has been found that in most cases their action contributes definitely to the relief of symptoms.

The cultures should be obtained fresh from the laboratory and used within 4 hours.

Following this treatment, which is given daily for 10 days, the patient is allowed to rest for 15 or 20 minutes.

This treatment has a sound physiologic basis, because it restores the normal intestinal flora (B. coli) whereas oral administration of B. acidophilus is purely symptomatic and unphysiologic. In intractable cases in which joint symptoms persist even after implantation of colon bacilli, the patients are sent to a laboratory for the complement fixation test as to intestinal or focal infection, and vaccines are made accordingly. These are usually cases in which the myofascitis is coincident with infectious arthritis.

Local Mechanical Treatment: The treatment just outlined alleviates local symptoms to such an extent that the need for local treatment is surprisingly diminished and is entirely secondary. In the most acute cases, in addition to the measures outlined, rest and recumbency m bed with the application of local heat are efficacious. This of course should be associated with stimulation of eliminative processes. When the case becomes subacute enough to be ambulatory, strapping of the back in precisely the same way as most clinicians would strap for sacro-iliac strain, namely, with a pad over the sacrum and tightly drawn adhesive straps placed three fourths of the way round the pelvis, is beneficial as a palliative measure until the toxicity is cleared up.

This strapping relieves the pull on the myofascial insertions **until the toxic inflammation is overcome by the Colonic Treatment and removal of other foci**, as already outlined.

When the toxic element has been brought under control, however, such strappings become unnecessary. The length of time for which they are required, if at all, varies within wide limits with the individual case.

Diet: Careful attention is given to the diet, with attention to thorough mastication.

Massage: Massage is of the greatest service in that it undoubtedly overcomes myofascial adhesions, stimulates local circulation, and is beneficial from every standpoint. In a few extreme cases in which the muscles and fasciae have become shortened, stretchings under an anesthetic have been found to be very helpful.

These consist of putting the patient in the dorsal position and flexing the hip with the knee extended. This treatment should be followed by massage with stretching.

Fluids: Every means of stimulating elimination should also be employed. Hence fluids should be taken in large quantities, and alkali water is very valuable. Daily hot baths with skin friction may be helpful.

Results: Striking has been the relief of symptoms when the colonic function has been returned to normal in cases that have been persistently resistant to mechanical treatment. Patients who have adhered to this regimen have been entirely relieved of symptoms that were in many instances chronic, and have discarded immobilization apparatus in cases in which this had previously been worn. **The only recurrence has been in cases in which the colonic function was again allowed to become deranged, and these have usually again responded promptly to treatment.**

Illustrative Cases

Case 1 following prolonged oral infection, extreme toxicity of the colon develops, demanding equal attention with the other foci of infection, before the symptoms of myofascitis will subside.

Case 1. — Mrs. J. A. P., aged 57, came to me, 9 Sept. 1927, on crutches, because of pain in the right knee which had begun gradually during 1926.

In December, 1926, sudden jerking of the knee was followed by sharp pain. Rest and massage did not afford relief. The knee became swollen and painful, and Heliotherapy was applied for 6 and one-half weeks, without relief.

Two dead teeth were then extracted, and the tonsils were removed.

Three days after the tonsillectomy the swelling and pain in the knee began to subside, but limited motion persisted and, at the time the patient came to me, any sudden motion caused sharp pain at the fasciai insertions of the muscles to the patella.

Examination did not show any fluid in the knee, and the roentgenograms were negative. Close questioning brought out the fact that the patient had to take a laxative every day. The stool was mushy in appearance. Its reaction was acid to all indicators. The dilution was 1:4. Histamine (iminazolylethylamine) was + + + + +.

Bacteria producing oxalic acid were present. Tests for hydrobilirubin were positive. Microscopical examination of the food residue revealed absence of fibers, a large amount of cellulose, and absence of other forms.

Blood pigment was + + + + +· There was a large amount of mucus.

Bacteria were 80%, gram-negative. Bacteria indole was +.

The examination showed a mushy stool, acid to all indicators. Histamine reactions were extra heavy; oxalic acid was present. The food residue consisted of cellulose. The contraindicated sugars were d-glucose and lévulose.

Mucus in large amount with extra heavy blood colouring reactions indicated a very marked mucus colitis.

A diagnosis of myofascitis was made. As the history showed that other foci of infection and toxicity had been eliminated, attention was directed to the colon.

Massage was also given to break up the adhesions around the toxic muscles and fasciae. The response to this treatment was almost immediate, and after 10 Colonic Treatments and daily massage for 1 month, the symptoms were relieved, and the patient discarded her crutches, 2 Colonic Treatments were given during October as a prophylactic measure. Since then the patient has been without complaint.

In this case, although the primary foci of infection had been removed, the metastatic toxicity of the colon had been overlooked, attention being centered on the local symptoms at the knee, and local treatment thereof.

Recognition of the fact that the knee symptoms were secondary to chronic toxicity of the colon, and treatment for myofascitis led to prompt relief.

Case 4. — Mrs. M. G, aged 32, seen, June 6, 1926, walked with a cane. She complained of pain in the left lumbar region, radiating to the left leg at times, and aggravated by turning in bed. About 1 year before, she had experienced pain in the left calf, radiating up the left leg. She had been treated elsewhere by baking, strapping, and extraction of teeth. Dorsiflexion of the left foot produced marked pain in the calf, in the left popliteal space. The stool was mushy in appearance. Its reaction was acid to all indicators. The dilution was 1:4. Histamine (iminazolylethylamine) was + + + +· Bacteria producing sulphureted hydrogen were present. Tests for hydrobilirubin were positive

Bacteria were 85%, gram-negative. Indole was + +.

The examination showed a mushy stool, acid to all indicators. Histamine and sulphureted hydrogen were present in large amounts.

The food residue consisted mainly of undigested meat. The contra-indicated sugars were d-glucose and lévulose. Mucus was present in large amount, indicating a marked mucuscolitis. A diagnosis of myofascitis was made, and following the third treatment the patient stated that she "danced all night" without ill effect. **After 7 Colonic Irrigations and 10 implantations, she was relieved of all symptoms.**

Case 5. — C M., a boy, aged 9 years, had had pain in both feet for 3 years. He walked on the toes of his left foot. The knees were also painful at times.

He had been fitted to plates and special shoes by a prominent orthopedic surgeon, and had faithfully carried out exercises prescribed by the same consultant, but without the slightest relief.

Examination, Nov. 9, 1927, revealed badly infected antrums, marked overweight, and a short achules tendon. The stool had the appearance of a pasty mass. The reaction was highly acid. The dilution was 1: 5. Histamine (iminazolylethylamine) was + + + + +·

Microscopic examination of the food residue did not reveal fibers or cellulose. Ninety per cent of the residue was undigested starch granules.

Blood pigment was + + +. There was a moderate amount of mucus.

Bacteria were 90%, gram-negative. The contraindicated sugars were d-glucose and lévulose.

This case illustrates the type of myofascitis in which the principal manifestation was in the feet in the form of pes planus. The gastrocnemius and soleus had been so seriously affected by prolonged toxicity that actual shortening had taken place and tenotomy had to be resorted to to lengthen the tendon.

This is also one of the most pronounced cases I have observed in which badly infected sinuses have caused a metastatic infection of the colon. I am certain that satisfactory relief would not have been obtained if the Colonic Treatments had not been carried on coincidentally with the evacuation of pus from the antrum and irrigation of the antrum.

Operation was performed as soon as the toxicity began to respond to treatment. The end-result on 1 June 1928 is excellent. It is useless to treat the local orthopedic symptoms unless the primary toxic condition is eradicated." - Dr Fred H. Albee, MD, Sc.D, Read before the Section on Orthopedic Surgery at the 79 Annual Session of the American Medical Association, Minneapolis, 13 June 1928, then published in "JAMA", 3 Nov. 1928.

> *"At a recent meeting of the Cleveland Academy of Medicine, when Myofascitis subject was up for discussion, the general practitioners were practically unanimous that 85% of the joint pains and backaches seen in general practice were due to infectious or toxic absorption from the bowels." - Dr. Walter G. Stern, MD in "JAMA", 3 Nov. 1928.*

> *"Myofascitis may be the prodromal stage, in many instances, of general arthritis, which may appear anywhere from 5 to 6 years later on." - Dr. Frank R. Ober, MD in "JAMA", 3 Nov. 1928.*

Myofascitis

"The term "Myofascitis," which I introduced in 1927, is a better designation, inclusive of the widely diversified manifestations and a multiplicity of symptoms all having a common origin, namely, toxic poisons, originating in infective foci or in faulty intestinal metabolism. It simplifies rather than complicates our diagnostic nomenclature by pointing to this common origin, and rationalizes treatment along one definite line instead of many and varied methods based upon misconception.

The toxic condition of the blood which underlies myofascitis is evidenced locally by low-grade inflammation of the muscles and fasciae, the fascial insertions of muscle to bone becoming particularly hypersensitive.

Pull or traction on these sensitive fascial insertions produces marked symptoms, out of all proportion to the degree of inflammation that is evidenced clinically.

Etiology

The toxic absorption may be of bacterial or of metabolic origin. Under bacterial origin we may include apical abscesses of the teeth, tonsillar abscesses or infection, infection of the antra, ethmoids, sphenoids, frontal sinuses or mastoids, prostatic infection, chronic appendicitis, cholecystitis, infections of the kidney and bladder, tuberculous lesions, lung abscesses and empyema, and other types of infection, such as osteomyelitis, etc. Under metabolic origin we have cirrhosis of the liver, faulty intestinal metabolism, particularly in the colon, gouty diathesis, etc.

Clinical Findings

Inflammation from toxic involvement is usually low grade. Indeed it is surprising that from an ordinary clinical examination more cannot be found in the way of edema or exudate as evidenced by the increase of diameters. Occasionally in severe acute cases in very muscular individuals the hamstring muscles have been found extremely sensitive to palpation, and with a series of "knots" extending from the tuberosity of the ischium to the popliteal space, necessitating constant recumbency. These cases are, however, in the minority.

Pain: The nest frequent location of pain is the lower back, where there are so many fascial insertions into bone. The pain may be vague or definite, and related to the spine, sacrum or posterior wing of the ilium. Constant functional tension on muscles and fasciae at the lumbar spine accounts for the very troublesome and persistent symptoms in this region.

Other points of myofascial insertion may be sensitive to touch or tension, as the patella, the point at which the tendo Achillis is attached to the os calcis, and also the epicondyles of the humerus (tennis elbow).

Many of the patients referred to me have complained of pain in the region of the sacroiliac joint, and had been treated or operated on elsewhere for relaxation of this joint.

The diagnosis had been considered confirmed because immobilization, such as strapping or application of a belt or cast, afforded temporary relief. Recurrence of symptoms and pain was frequent.

This, of course, was due to the fact that the primary etiologic factor, namely toxicity, had been left untreated.

The myofascitis or straight leg raising test. In practically every such case of low back pain, flexion of the hip, associated with extension of the knee, caused tension and resultant acute pain at the fascial insertion of the gluteal and hamstring muscles into the bony structures in the region overlying the sacroiliac joint.

These fascial anchorages of muscles to bone are at the crossroads of the trunk and thighs; they are pulled upon by the most powerful muscles of the body, and are on more or less tension most of the time. Therefore, if sensitive from toxic irritation, constant pain and discomfort may result.

Why toxic absorption involving other parts should so universally involve the gluteal and hamstring muscles, and particularly when it is unilateral, why it should involve the left side in a ratio of 10 to 1 as compared with the right, Because of its constancy, however, this straight leg raising test is always used when toxicity is suspected even elsewhere. And when pain is elicited, I have called this the myofascitis sign.

Although in low back cases the pain may seem to be in the sacroiliac joint, upon more careful study it is found to be more widely distributed in the surrounding muscular insertions.

So-called “sacroiliac strain”, a diagnosis which up to 10 years ago I frequently made myself, and is still often made by others, I find is associated with symptoms widely distributed outside this joint, a fact which is not consistent with a simple joint strain.

It is practically impossible, because of the anatomic position of the joint beneath the posterior wing of the ilium and the deep overlying structures, to be certain whether the pain is from pressure on the joint itself or on the fascial insertions of muscles into the surrounding bony structures.

A careful analysis of findings and symptoms leads one in many cases to the latter conclusion, and the results of treatment based upon this conclusion support it more definitely than any theoretical considerations. If there is sensitiveness to deep pressure over the fasciae or muscles in the region of the posterior superior spine of the ilium, posterior surface of the sacrum, over the gluteal fasciae, and along the fascia lata on the outer aspect of the thigh, the case is one of myofascitis, and not sacroiliac strain.

In certain instances this sensitiveness extends from the outer side of the leg to the region of the external malleolus.

From repeated examination I feel that true sciatica is also rare, and that most cases clinically called sciatica are myofascitis.

The character and wide distribution of sensitive areas noted on palpation is not in accordance with the location of the nerve trunk and its branches, but rather with that of the fasciae.

Differential Diagnosis

Features in the differential diagnosis are a history of former manifestations of toxic absorption, such as headaches, crick in the neck and lumbago, and usually some evidence of a focus of infection or origin of toxic absorption, such as an infected tooth or tonsil, or colitis. These may be revealed by x-ray findings, physical or laboratory examination.

Myofascitis in the lumbosacral region results in pain in the region of the sacroiliac joint, because of tension upon fascial and muscular insertions over or directly around it.

Adhesive strapping as usually carried out for sacroiliac relaxation or strain may relieve pain because the immobilization relieves these sensitive insertions from the tension of muscle pull or postural change.

Faecal Analysis as Indication for Colonic Irrigations. Without going into a discussion of the toxic etiologic influence of histamin, I am convinced, after studying hundreds of cases in which I have had stool examinations made, that histamin in large quantities in the colonic content is an index of toxicity of the stool, whether it is the principal offending toxic agent or not. I find it is a very helpful guide to treatment, to have stool examinations made in practically all cases of suspected myofascitis.

Treatment

Since toxic absorption is the underlying factor, treatment is primarily aimed at this, and secondarily at the local orthopedic manifestations. In cases seen early, mechanical treatment of the latter is entirely avoided, except for a short period in the most acute cases. Even in cases seen late, the duration of such treatment is markedly diminished.

Of the many possible foci of origin of toxicity, the colon stands at the head in frequency. In the majority of the cases which I have seen it has been the offending source. It has further been observed that in case of long standing oral infections, whether the primary focus be in tonsils, teeth, antra or other frontal sinus, there is likely to be a residual and more trouble some toxicity in the colon. In other words, these conditions add to the likelihood of toxicity from the latter.

When the primary oral focus is eliminated it has become my common practice to carry on a supplementary treatment of the colon.

Colonic Lavage: As soon as a report indicating toxicity has been made on the faecal analysis, the colon is treated daily with medicated lavage. There is no need of extensive apparatus for this. A great deal of undesirable practice has grown up, furthered by ambitious manufacturers, to use apparatus of more or less complicated nature to impress the patient, and actually accomplishing very little so far as lavage of any appreciable portion of the colon is concerned.

It is claimed that the average colon has about 500 sq. in. of surface.

Some of this elaborate apparatus, particularly of the two-way type, brings the fluid into a particular spot of the colon and discharges it through another tube at

practically the same point thus reaching only a few square inches of the colon.

The patient is particularly impressed by either seeing or hearing this stream of water flowing for a considerable period of time through a tube and out of the colon, and he believes that his whole interior is being thoroughly washed.

The actual lavage is much more thorough when carried out by a short glass anal tip and ordinary fountain syringe, volume of the fluid, posture, and specific gravity being trusted to assure the fluid reaching the upper portions of the colon.

Introduction of B. acidophilus by Mouth or by Colonic Implantations.

Much has been accomplished by sweeping out of the colon abnormal mucus, acid and toxic products and bacteria; but one should not rest with this lavage as it is very likely to have only temporary benefits, and the same harmful products may slowly accumulate again. Inasmuch as the bacterial flora have such a marked influence upon the proper function of the colon, every effort should be made to influence the development of the proper flora, and the bacterial agent which I have used to accomplish this has been the B. acidophilus.

Its growth in the intestinal tract in large numbers may be stimulated in several ways.

It has been revealed by careful study that when a patient is given lactose for a considerable period of time, the B. acidophilus will slowly increase in the colon. In other words, lactose is a favourable medium for these bacilli to grow upon.

Consequently, when it is deduced that faulty metabolism is due to a deficiency of B. acidophilus in the colonic flora I recommend the substitution of lactose (2 tablespoonfuls or more per 24 hours).

For treatment purposes, this method alone is entirely too slow. It is therefore wise to give, by mouth, 2 teaspoonfuls of a culture containing not less than 200,000,000 active bacilli per cubic centimetre before each meal. If the patient prefers, various milk preparations or acidophilus- charged beverages may be used.

Also, the bacilli may be implanted after the last lavage in a small quantity of water and lactose, with a catheter. Heliotherapy is most beneficial in all cases.

Diet: A low-residue diet is prescribed which prevents carbohydrates from reaching the colon in undigested form. As Finker and von Wassermann have proved that auto-intoxication is the result of bacterial activity on certain sugars, elimination of the offending sugar from the diet.

To forestall any possibility of residue protein reaching the colon undigested, or bringing with it partially digested carbohydrates and liberating them in the colon, proteins and meats are taken only in moderate quantities, and the importance of thorough mastication is impressed upon the patient. The work of Kellogg at the Battle Creek Sanatarium has taught us much regarding the relation of diet to the action of the colon, and the influence of the colon upon health.

To help restore the alkaline balance, citrus juices, particularly tree-ripened grapefruit juice, or alkaline waters are given frequently. Fifteen grains of calcined magnesia and calcium lactate are often given in water after eating, three times daily. This regime tends to overcome, without harmful cathartics, the constipation which is so frequently present in cases of myofascitis.

Inasmuch as fresh grapefruit is usually shipped in a semi-green state, the most trustworthy way to get tree-ripened grapefruit juice is to buy that specially canned from ripe fruit.

Local mechanical treatment: Deep massage to the parts complained of is a most important part of the treatment, it being realized that fascia draws its nourishment from the lymphatics and not from the blood supply.

Stretching (manipulation & adjustments) of the lumbosacral region by forcibly flexion of the hips with the knee extended, as carried out for cases of so-called sacroiliac strain, often helps to give relief in chronic cases of this kind, the result being that muscular and fascial adhesions are ruptured and overcome.

This explanation is offered as accounting for relief brought about in many instances by Osteopaths and Chiropractors by their manipulations.

Elimination of toxicity is accomplished by a combination of methods: Local Massage, Colonic Lavage, stimulating the growth of bacilli acidophilus in the intestinal tract, and attention to diet. Local mechanical treatment is also applied when necessary.

Illustrative Cases

Case I. Two years ago a successful baseball pitcher came to me with what would be called in baseball parlance a "glass arm." He had a successful season as a pitcher until about two weeks before the finish of the season, when his arm all of a sudden went stale and he was unable to perform with it. His muscles were sore. Deep pressure over the epicondyles of the humerus caused pain. Palpation of several other parts of his muscular system elicited pain.

The myofascitis test was applied revealing that the gluteal and hamstring muscles were so sensitive to stretching that it was only possible for him to raise his feet slightly off the examining table because of severe pain.

This was suggestive evidence that there was present a systemic toxic condition resulting in multiple manifestations. Although this test revealed myofascitis in the gluteal and thigh muscles, far removed from the arm complained of, nevertheless, it was confirmatory of the same condition existing in the muscles of the overused arm.

The trustworthiness of this pump handle test at the thigh and hip has been striking in confirming the suspicion of toxic or metabolic involvement of parts widely separated. It was not difficult to obtain the history of sinus trouble and an x-ray and thorough nose and throat examination revealed that the right antrum was badly infected and full of pus. Drainage and treatment of this antrum, attention to diet to build up the alkali reserve, and colonic irrigations with the administration of lactose and B. acidophilus to aid in hastening elimination of toxicity, and rectification of the colonic flora, soon led to relief of symptoms.

This was a case of myofascitis, ordinarily diagnosed "glass arm."

The man being a baseball pitcher, the local manifestations of toxic absorption were centered in the arm at the myofascial insertions to bone, principally because

of fatigue and overuse of this part of his anatomy, precisely as occurs in the muscles of the leg in excessive standing with the muscles and fascia in a toxic condition.

Case II. The second case is that of a professional baseball outfielder who, several months before examination, when chasing a fly-ball, was seized in the thigh with such severe pain that it necessitated his being carried off the field. He himself diagnosed the condition as a "Charlie horse," and when the doctors began to discuss whether he had fractured a bone or not, he said, "Oh, bosh, it's a "Charlie horse". I have had it on and off ever since I was a youth." This is another case of myofascitis, with the local symptoms in the muscles and fasciae of the thigh and calf.

Case III. In 1920, there came to my office a professional man of 48. During the War, when he was greatly overworked, he had developed severe gastrointestinal trouble evidenced by pain coming on about 2 hours after eating and relieved by large doses of bicarbonate of soda, and diagnosed as a duodenal ulcer.

This was also associated with constipation and flatulent stools.

A week before the patient was seen by me he had a general pharyngitis. From the posterior pharyngeal wall, which was slightly edematous, there was secured a pure culture of Streptococcus hemolyticus. This pharyngitis was immediately followed by sudden and severe pain in the left lumbar region, loin, and upper posterior part of the thigh, for relief of which he consulted me. An athlete at college, he had gained weight soon after entering his profession. His work necessitated considerable standing and he had developed pronounced flat feet which were also very painful.

There was extreme sensitiveness over the posterior part of the thigh, which upon casual examination would certainly have been considered due to pressure upon the sciatic trunk. But more careful questioning and examination revealed the fact that the pain was over the fascia of the posterior outer side of the thigh, radiating to the outer side below the knee, and reaching almost to the ankle.

With the patient in the dorsal position upon the examining table, with the knee extended, any attempt to flex the hip was associated with complaint of severe pain in the lumbar and posterior thigh region With the patient on the right side, an attempt to adduct the left leg was associated with pain in the outer posterior part of the upper thigh, apparently due to tension on the fascia lata.

In the past history of this case, following excessive use of the hammer in driving heavy nails (work to which this man was entirely unaccustomed), marked sensitiveness had developed over the external epicondyle of the humerus which the patient localized at the exact location of the ordinary "tennis elbow" and was diagnosed by an orthopedic consultant as such. This had taken 3 months to subside.

Laboratory tests, roentgenograms of the teeth, examination of the tonsils by a nose and throat specialist, and examination of the prostate, urine and blood

chemistry failed to reveal anything abnormal. But a stool examination revealed the presence of histamin 4 + (scale of 1-5) and was acid to all indicators.

The man was obviously not a neurotic and history and examination convinced me that I was dealing with a case of toxic absorption from a disturbance of his gastrointestinal functions and colitis, resulting in myofascitis. The patient was given medicated colonic lavages daily for twelve days, followed by lactose and B. acidophilus, and his diet regulated. As he was a hard working executive frequent vacations were insisted upon.

The acute symptoms subsided. At the end of 4 weeks, he was able to resume work but was instructed to continue his diet. At the end of ten years, he is still free from his "sciatic" or sacroiliac pain.

Case iv. This patient, an author who had led a sedentary life, came to me complaining of low back pain. He had also been troubled with serious heart disease, for which he was being treated by an eminent heart specialist.

The patient's teeth were found to be in bad condition, and inasmuch as the myofascitis test was positive, I suspected that I was dealing with a case of toxicity, probably with an apical abscess as the source of infection. I referred the patient to Dr. Alexander W. Currie, a New York dentist, who became greatly concerned during the extraction of a badly diseased tooth when he saw the large sac following along after the tooth. After the elimination of this toxic

source and treatment of the patient's colon, not only did the low back pain disappear, but the symptoms of heart disease, as well.

Discussion

In my medical school days, there used to be a saying, ''When in doubt, think of syphilis." Since I have been working with myofascitis, I always think of this possibility in doubtful cases, particularly of low back pain.

Myofascitis is undoubtedly a pre-arthritic condition. I have observed a number of cases where there were no evidences of joint involvement when I made the diagnosis of myofascitis, and several of these patients who failed to heed my warnings and accept my treatment came back at a later date with a real arthritic condition. In other words, neglected myofascitis may lead to arthritis.

Symptoms of the former are danger signals that the latter is impending.

Constant absorption of poisons into the circulation may result in arthritis, arteriosclerosis, or some other lesion that may be even more serious than myofascitis. Undoubtedly, outdoor exercise helps metabolism, so that patients who are on the threshold of myofascitis may avoid it for many years just because of their favorable regime of life. Myofascitis is prevalent in muscular individuals of plethoric nature who have formerly been athletes, and at the time of the onset of symptoms are leading sedentary lives.

The cause may be, to a degree, occupational, too sedentary a life leading to uric acid retention, and this in turn to toxic absorption. In a complete blood chemistry examination, uric acid retention is often observed in these cases.

Gouty diathesis is often a very important etiological factor.

Steindler in his "Reconstructive Surgery of the Spine and Thorax" lists four cardinal features upon which the diagnosis of sacroiliac or sacrolumbar strain can be based:

"**1. There is a definite anatomic point of tenderness, which is circumscribed**.
This is true in myofascitis. There is a circumscribed area of tenderness at the fascial insertions of the gluteal muscles to the sacrum and wing of the ilium, over and in the neighborhood of the sacroiliac joints.

2. There is a typical position of aggravation of the pain.
This is true in myofascitis in that the same position produces pull or strain upon the muscles and fasciae in this region and causes pain.

3. There is a position of relief from painful symptoms.
This is true in myofascitis in that the same position relieves the involved muscles and fasciae from strain and relieves symptoms.

4. Acute sprains respond to immobilization of the joint in the position of relief, or in such position as will relax the sprained ligaments.
This is true in myofascitis for the same reason stated under 3."

Miltner states that "the fact that chronic cases are often not relieved by immobilization is usually due to faulty or incomplete rest of the parts."
In my experience such cases are not relieved because the case is not studied as a whole, and because the origin of the toxic absorption is not located and eliminated.
In recommending special tests for differential diagnosis Miltner says: "Straight leg raising causes pain where there is sciatic radiation in either sacro-iliac or sacrolumbar sprain." "Sciatic radiation" is, I believe, fascial radiation throughout, the fascia overlying the sciatic nerve. He continues: "Laguere's sign, which consists of forcing the leg in flexion, abduction and outward rotation, causes pain in the affected sacroiliac joint." I believe this pain is not located in the sacroiliac joint itself, but in the fascia and muscle overlying it in a large percentage of cases.
The Goldthwait sign, it is claimed, produces pain in the affected sacroiliac joint by strongly flexing the hip with the knee extended, and it is explained that the tension of the hamstring muscles produces a rotatory force upon the painful sacroiliac joint. This can be equally well explained by the fact that this pump-handle test produces tension upon the fascial insertion of the muscles overlying the joint. A part of the explanation of pain thus produced in the sacroiliac joint region may be according to Freiberg, because of tension transmitted through the sensitive pyriformis muscle to its origin in the neighbourhood of the sacroiliac joint, including its capsule.

Stretchings (manipulation, adjustments) in such sub-acute or chronic cases afford relief of pain, I believe, in the majority of cases by overcoming adhesions m the fascia and muscles. In connection with these stretchings, Miltner mentions a "loud pop" or "cracking sound", the exact nature of which is questionable but which he presumes is produced by the replacement of relaxed or sublaxed sacroiliac joints.

I do not believe one need question its origin, in that it is the adhesions giving way in the overlying joint structures, precisely as they give way in a joint when manipulated. In fact, if one palpates the structures during these manoeuvers, it seems conclusive that the location of the cracks is in these structures.

Results: Striking has been the relief of symptoms when the toxicity has been relieved in cases that have persistently resisted mechanical treatment. Patients who have adhered to the above regime have been entirely relieved of symptoms that were in many instances chronic, and have discarded immobilization apparatus worn previous to my treatment. The only recurrences have been cases in which there was a definite relapse in the focus of toxicity. The relatively small number of recurrences has been very striking, as compared with those I experienced in former days when treating such cases purely from a local and mechanical standpoint.

It has been found most advantageous to have the entire treatment, as outlined, carried out under the direction of the same practitioner, because the toxic condition and the orthopedic manifestations are so closely interrelated.

A most striking feature of this study has been the trustworthiness of the diagnostic test which has been designated the myofascitis sign (pain at the sacroiliac insertions of gluteal and hamstring muscles from "pump-handle" flexion of the hip) in confirming a suspicion of toxicity although the part complained of may be far removed.

Why toxic involvement of these parts is so much more frequent than structures of similar nature elsewhere, I am unable to determine unless the parts are more dependent upon a lymphatic circulation which is sluggish.

Treatment

1. Eradication of foci of infection, such as tonsils, sinuses, teeth apical abscesses, prostatic infection, etc.

2. Heliotherapy, the local application of heat followed by deep massage and stretching of painful parts to overcome adhesions in muscles and fasciae.

3. Diet to build up the alkaline reserve in the body, by frequent intake of citrus juices such as grapefruit, lemon and orange juice, Kalak water and other alkaline waters.

4. Special Hot Baths with extensive skin friction following them to stimulate eliminative action of the skin.

5. Colonic Irrigations as a treatment for colitis and as an additional means of elimination of toxins.

6. B. Acidophilus Colonic implantations or by mouth to correct colonic bacterial flora.

7. If the condition is acute and painful, the prolonged application of heat, preferably by electric pad.

Response to treatment may be prompt or slow, depending on the duration of the toxicity. Frequently it is slow, but in a series of 840 cases seen in the last 10 years and treated as myofascitis, relief of symptoms has been constant in a large majority of cases, convincing evidence that we are dealing with a true clinical entity." - Dr Fred H. Albee, MD, FACS, in "American Journal of Surgery", January 1934.

The Role of the Colonic Flora

"This work (The role of the colonic flora in maintaining a healthy large bowel mucosa), explores the intricate relationships between bacterial products of fermentation, the short chain fatty acids and the effect that these have on the colonic epithelium and the immune system. It confirms that butyrate is a major energy source for the colonic epithelium and there may be a minor epithelial abnormality in the metabolism of butyrate in patients with ulcerative colitis.

Immunological studies suggest that butyrate has an effect on lymphocyte activation and inhibits cell proliferation. Possibly, butyrate induces anergy in lymphocytes via an effect on the T-Cell receptor. This may represent a mechanism whereby colonic bacteria are able to regulate the host immune response.

An abnormal response to butyrate may upset the homeostasis between the gut immune system and the colonising bacteria resulting in epithelial unrest and inflammation. Historically, the colon has been considered as a source of sepsis and chronic ill health. In the 1870s, Metchnikoff suggested that "the large intestine with its teeming myriads of bacteria was a source of chronic poisoning, the removal of which would indefinitely prolong life".

Arbuthnot Lane, took up this teaching and attributed a large number of diseases including diabetes mellitus and flat feet to 'auto-intoxication arising from the chronic sepsis in the intestinal cesspool." - Mark A. S. Chapman, Surgeon in "Annals of the Royal College of Surgeons of England", 2001.

Treating the Brain by Treating the Gut

"Having a high Firmicutes-to-Bacteriodetes ratio can be concerning because of its link to obesity, diabetes and inflammation. Under magnification, the intestinal tissues of healthy models resembled an orderly colony of coral.

The branches of "coral" were actually villi, tiny projections that increase the surface area of the intestinal wall for the absorption of nutrients. It was found that in post-stroke models, the intestinal tissue looked scrambled, disorganized even a month after researchers triggered the stroke. With less space between the villi to allow nutrients to move around.

Poor absorption of nutrients can lead to compromised stroke recovery.

Researchers want to know how a breach in the intestinal barrier could affect the central nervous system. Protecting this barrier is critical for the function of the enteric nervous system, a part of the peripheral nervous system that includes the gut and often is called the 'second brain." - Allison Brichacek, Candice Brown, researchers, West Virginia University School of Medicine, 12 March 2019.

Chapter 41

Tabes Dorsalis, Locomotor Ataxia Loss of Coordination of Movement

"The nails may fall off in peripheral nerve disease and in tabes; they are, moreover, frequently discoloured, ridged, and brittle. The hair has been known to turn grey suddenly, in a single night, after severe emotion. Perspiration may be excessive or arrested. Occasionally there is unilateral perspiration.

These disturbances depend upon lesion of the sympathetic nerve or of the cerebro-spinal centres connected with the sympathetic.

The trophic nerves to the skin are distributed with the sensory fibres, for it is in such diseases as locomotor ataxia where pains are severe that these lesions occur; moreover, in lesions of the anterior cornua, where there is no sensory disturbance, the skin is unaffected. Just as the nerve cells in the anterior cornua of the cord stand in trophic relation with the muscles and joints, so the posterior cornua of the grey matter exert some influence over the nutrition of the skin.

Trophic disorders of the viscera are occasionally observed.

Lesions of the vagus nerve are said to give rise to pneumonia, and fatty heart.

Cerebral haemorrhage is said to be frequently associated with pneumonia of the lung on the side opposite the lesion.

I have twice observed pneumonia on the side of the hemiplegia after cerebral haemorrhage. Acute cystitis and renal congestion commonly occur in acute myelitis. The joints and bones have a trophic relation, it is supposed, with the anterior cornua of the cord.

Lesions of the peripheral nerves of an irritative kind are apt to cause acute inflammation of the joints supplied by the nerves, and anchylosis may result.

Trophic disorders of the joints and bones frequently occur in tabes dorsalis, and are attributed by Dr Buzzard to disease in the medulla oblongata **from their frequent association with gastric crises."** - Dr Cornelius William Suckling, MD in "On the Diagnosis of Diseases of the Brain, Spinal Cord and Nerves", 1887.

"Before I had noticed Dr. Buzzard papers in "Brain", in which he lays emphasis on the frequency of a vascular origin for tabes dorsalis, the prominence of the vessel changes in the present case had not failed to arouse my attention, and their nature renders it impossible to disregard the conviction, that some very important part is played by them in connection with the development of the disease.

It will be recalled that their distribution is in a large number of instances the centre for an increased growth of connective tissue, for the disintegration of the grey matter or cell-groups, that their coats show signs of inflammatory alterations,

and constant indications exist of an active migration of lymph-cells and occasionally of the conversion of the latter into neuroglia-corpuscles.

Adamkiewicz has pleaded forcibly for a primary connective tissue increase in tabes, determined around the course of the blood-vessels, and his statement lends strong support to Buzzard's views.

There is yet another pathological feature of interest occurring in a tract of close anatomical and functional relationship to the vessels and which demands especial notice, viz.: the perivascular sheath and its contents.

The changes in this are most obvious in the cord from the lower dorsal segment, upwards. In the regions below this the absence of the distended spaces is probably explicable by the universal sclerotic contraction, which not only obliterates the perivascular channel, but compresses the vessel walls almost to the rendering of the lumen impervious. It is likely also that obliteration of the perivascular space may occur by proliferation of the connective elements existing between its sheath and the adventitial tunic.

It is interesting to consider the relationship between the vascular and perivascular systems and the connective tissue overgrowth, and a propos of such, some few remarks may be made. Since the change is of the nature of an hypertrophy a condition of excessive nutrition is probable.

All prolonged states of functional activity are associated with commensurate physical changes, and demand an increased supply of nutriment which is afforded by the blood plasma exuded from the capillary walls. It is recognised that since the capillaries run in lymph-spaces, the absorption of the plasma is not directly from the vessel walls but from the perivascular canal, as is also recognised the extremely intimate relationship between the lymph channels and connective tissue.

An excess of exudation from the vessels under conditions when no call is made for it by the tissues, produces well-marked changes in the elements of the latter.

Such undue exosmosis may arise from increased pressure in the arteries or from a morbid change in their walls; in the latter case, their permeability being increased, the escape of the morphological elements is much facilitated. And it is probable that migrated leucocytes are active agents in tissue proliferation.

Supposing, now, that some system tract by increased functional activity demands those nutritive modifications which are needful to support a consequent increased tissue consumption, changes occur to secure a larger supply of nutrient fluid to the elements and this the latter derive in the manner before described.

Under normal conditions such a freer supply when afforded is regulated by the demand, an equal balance being preserved between them, and an equable relationship maintained between the amount supplied and the effete products removed.

Some prominent causes of a disturbance in the harmony of this process at once present themselves:

1. One may be, a condition of the vessels, general or local, inherited or acquired, causing a tendency to the occurrence in them of morbid changes. Should this exist, and circumstances be added which involve a constitutional or local impairment of nutrition, and others which require increased functional performance, disease of one or another kind of the vessel structure is likely to be developed, and one of the conditions needful for the readjustment of altered relationships is lost.

2. Another may be that predisposition, to which the term dyscrasia is applied, to a ready proliferation of tissue-elements, and perhaps also to the production of a specific form of effete material.

3. Thirdly, some state of the lymph paths, primary or derived, which by leading to vitiation of their contents, and by the blocking of their channels, to the stemming back of effete material, tends to produce a spreading of lesion along their course and to impair the vitality of the tissues which they drain.

In this way may, crudely enough, he carried back the pathological process to an origin, the exciting agent or agencies of which are yet to be found.

Concluding this portion of the subject, we are compelled to notice the pathological lesions in the brain in connection with the preceding remarks.

Recalling what has been said regarding the dependence of the Connective Tissue Hypertrophy on disturbance of Nutrition and of the balance between the Vascular and Lymphatic Systems, the presence in the brain of certain conditions of an assimilable kind to those in the cord, suggest again that the cerebral and spinal lesions are part of a wide-spread affection of the nutrient canals.

The hypertrophic changes in Deiter's cells are known particularly to depend on conditions of Lymph Obstruction." - Dr F. St. John Bullen, MD in "Brain, A Journal of Neurology", Vol. 11, 1889.

The Relation of General Paralysis and Tabes Dorsalis

"Our knowledge of tabes dorsalis, we principally owe to the classical work of Westphal, who described accurately the anatomical lesions of that disease, and the same author was the first one to describe, in 1878, a case of general paralysis and co-existing tabes dorsalis. Moeli reported a similar case three years later.

Since then valuable contributions have been made by French and German writers. Among the first to suggest the unity of tabes dorsalis and general paralysis, after Westphal had shown their similarity, was Raymond, and he was supported by J. Nageotte, who published his "Tabes et Paralysie Generale", Paris, 1893.

He says further: "Are not tabes and general paralysis topographical expressions of the same morbid entity, as 2 branches of the same tree, as 2 geographical localizations of the same disease? Consequently, in their interpretations we have a

unified disease, which, if localized exclusively, or in a manner more or less prominent, in the spinal cord constitutes tabes, which, if in the brain constitutes general paralysis, which, if it affects at the same time the cord and brain, constitutes a mixed type, cerebrospinal tabes.

It has also been shown that in cases beginning as tabes and later becoming general paralysis, that tabetic symptoms would frequently be arrested somewhat at the onset of the later disease. Ataxia that was well-marked before the onset of general paralysis, afterwards will be almost entirely absent and other symptoms may follow the same rule.

The fundamental symptoms of tabes may be regarded as:

1. Argyl-Robertson pupil
2. Absence of deep reflexes
3. Objective and subjective sensibility disturbances
4. Visceral disturbances (vesical and rectal paralyses, gastric crises, etc.)

Cases

Cases are herewith given, 10 of which are from the records of Worcester and 2 from the Danvers Insane Hospital. They are selected because they present such clinical symptoms and anatomical findings as illustrate the various types of tabo-paralysis:

Case I — Tabes with mental symptoms. Classical tabetic symptoms.
Expansiveness. Lack of judgment and deterioration Epileptic seizures.
Gastric crises. Lancinating pain in legs. Ocular paralyses. Died of lobar pneumonia. Duration 8 years. Autopsy: Degeneration of posterior columns of cord. No typical changes of general paralysis in cortex. Age. 48.

Case II - Tabes preceding general paralysis by 3 years. Circular form of psychosis. Lightning pains. Ataxia. Paralysis of rectum and bladder. Incoordination. Epileptiform seizures. Trautna and syphilis. Autopsy. Changes of general paralysis in cortex. Far advanced tabetic degeneration of cord. Age. 42.

Case III - General paralysis and tabes coincident. Demented type. Syphilis not established. Rapid progression. Epileptiform seizure. Duration 2 years. General paralysis changes in cortex. Cord. Posterior column degeneration. Right knee-jerk returned after convulsion of right side. Age. 61.

Case VI - Tabetic paralysis. Syphilis 10 years previous. Depressed type. Suicidal. Atypical course, 3 years remission. Tabetic symptoms well marked. Vesical paralysis. Death from cardiac failure. Autopsy. Typical changes of general paralysis in cortex. Cord - posterior colunm degeneration. Age. 33.

Case IX - Tabetic paralysis. Headaches and shock at onset. Convulsions. Delusions of persecution. Later transitory shock affecting right side and transitory aphasia. Cutaneous sensibilities slight. Marked ataxia. Improvement and escape. Age. 31.

Case XII - Tabetic general paralysis. Exaggerated knee-jerks. Epileptiform convulsions. Pupillary disturbances. Expansiz'e-deniented type. Muscular atrophy and contractures. Syphilis in husband. Duration 1 year. Death from septiccetnia. Autopsy: Well-marked changes of general paralysis in cortex and typical posterior column degeneration in cord. Slight lateral column degeneration. Age. 41.

Epileptiform seizures similar to those seen in general paralysis occurred in 6 cases and were impartially distributed among the various groups. Mott reports 30% of the cases of taboparalysis with numerous epileptiform seizures, 34% with one or more seizures, while in 36% no convulsions were observed. Apoplectiform seizures affecting one side and transitory in character were observed in 2 cases and in Case IX, transitory sensory aphasia occurred.

In Case III after an apoplectiform seizure affecting the right side, knee-jerks returned on that side for a while. The mental symptoms seen in tabo-paralysis are similar to those also found in general paralysis and show the same variations.

Other symptoms, which are common in tabes, but not always present ill the same degree such as lancinating pains, loss of sense of position of joints, marked ataxia, visceral crises, vesical and rectal paralyses, hypotonus. Frankel and Forster in “Archives fur Psychiatric und Nervenkrankheiten, Band 33, heft I”.

Mott like the first named writers, found that the disturbance of the cutaneous sensibilities corresponded to certain segments of the spinal cord whose posterior roots supplied the skin. The roots most affected were lower cervical, middle thoracic, lower lumbar and sacral.

Pathological Anatomy

Mott in “Regressive changes in nerve cells and fibres and progressive changes in neuroglia, as a result of degenerative process in nerve elements”, is inclined to agree with Schaffer in regard to this elective character of the process and advances the hypothesis that the localization of the process depends not only upon the presence of some irritant toxin, but upon anatomical and physiological factors as well.

The peculiar condition of the arterial and venous circulation in the fronto-central regions, which favour stasis, he believes partially explain why these regions are attacked.

Coupled with this anatomical factor is that of stress, and these would tend to lower the resistance and so allow a toxin to fix upon these regions of the central nervous system.

Mott states that the plasma cells are indicative of an acute irritative process in the cortex, “and their abundance is clearly associated with the amount of acute neuromic irritation and destruction”.

Various conditions, such as blood supply, toxins, etc., may be the cause of the fibres of conducting paths losing this normal balance, and degeneration occurs.

This theory explains many things, but why the posterior roots are affected in preference to the anterior roots can be explained only by assuming that

the posterior roots offer less resistance to the toxic agents. The anatomical studies at present would lead one to believe that the degeneration of the posterior columns in tabes, is a primary intra-medullary degeneration of the posterior roots, and that other changes are produced by the same factors. This view appears more rational as it supports the theory of a toxic substance, selective in character as causing the process. Mott argues from a bio-chemical view point, assuming the presence of an irritant toxin and arguing that it acts upon the central nervous system in a manner analogous to alcohol, lead and other poisons.

These may produce a morbid process in the brain, spinal cord or peripheral nerves in different individuals, though the disease process attacking these various regions, is essentially the same.

And as it is true for these poisons, it is reasonable to suppose that the toxin of syphilis follows the same rule. This view would consider the process as the result of an irritant poison only affecting the regions of the central nervous system that offered the least resistance.

This view is in harmony with some of the known facts, and is practically the same as that taken by Schaffer. Edinger's theory of the tabetic degeneration is based upon the same hypothesis.” - Dr Henry A. Cotton, MD, in “The American Journal of Psychiatry”, 1904-05.

Chapter 42

The Role of Nature in Emunctology

"If you assist Nature you will soon be cured." *- Clement Jeffery, MA, in "Positive Health", 1928.*

"Nature is to be trusted to the end." - Dr A. T. Still, MD, DO in "Autobiography", 1897.

"**Treat Nature right in all respects, and she will abundantly reward the effort, by her very best exertion to restore and maintain health.**

But this cannot be said of ordinary drugs. If they do not effect good, they do harm. If the morbid influences which they always produce, do not meet and counteract the disease, they add another morbid and injurious influence to that already existing.

In general, especially in chronic diseases, everything should be tried which can give any promise of relief, before resorting to medicines.

Indeed, as a general rule, drugging in chronic cases is the worst thing that can be done.

If removing causes, proper abstinence, judicious discipline, and other means short of drugs, cannot avail, the patient had better, as a general rule, make up his mind to die honourably, than to drug himself to death.

Let it be remembered by all, that of all the cures that can ever be found, there is none that can be so valuable as prevention.

Nature is always right in her action, and she always goes for health.

Prevention is better than Cure." - Dr Larkin Baker Coles, MD, in "Philosophy of Health: Natural Principles of Health and Cure: Or, Health and Cure Without Drugs", 1851.

Medicus Naturae Minister Non Magister Est

The Physician being the Servant of Nature not the Master

"The well established fact with regard to many diseases, that they tend intrinsically to recovery, and not to death, as formerly supposed, shows the conservatism of nature.

The recovery, sometimes even without medication, from diseases which are generally destructive, exemplifies the principle.

This is certainly true of pulmonary tuberculosis.

The principle is exemplified in the situation of the great majority of local affections which are not traumatic, and therefore said to be spontaneous; the parts oftenest affected being not so closely connected with functions necessary to life as the parts which generally escape, thus, the great majority of acute inflammations are seated in the skin, mucous structures, and certain of the serous membranes.

On the other hand, internal organs, the functional exercise of which is more immediately concerned in vital operations, such as the stomach, small intestines, pancreas, liver, kidneys, are comparatively not often acutely inflamed.

The principle is seen in the spontaneous removal of morbid products from different parts of the body, and in the disposal, by elimination or otherwise, of the materies morbi which there is reason to believe give rise to a host of local affections.

The physician, by attempting to place himself in the false position of the master of nature, may thwart her conservative provisions much to the detriment of his patients. **The physician is the servant of nature, when he does not interfere with.**

1. The conservative physician endeavours to protect the system, on the one hand, against disease; and, on the other hand, against injurious medication.

2. The practice of the conservative physician has reference always, not alone to the disease, but to the condition of the patient. In the language of M. Chomel, he does not treat diseases, but he treats patients affected with diseases.

3. The conservative physician directs his attention with special care to the vital powers. He is always ready to support these wherever he sees evidence of their failure, without regard to the name or the stage of the disease.

4. Conservatism tries to avoid being led into injurious medication by such loose expressions as "substitution of healthy for diseased action". - Austin Flint, MD, Professor of the Principles and Practice of Medicine, Bellevue Hospital Medical College, Long Island College Hospital, in "Conservative Medicine as applied to Therapeutics", The American Journal of Medical Sciences, 1863.

The Power of Nature in Curing Disease

"The part nature performs in the cure of disease. When the human organism becomes impaired, and strength fails and becomes unable to perform its allotted duties, we say it is diseased, and proceed to cure it.

The Creator has implanted in the human body what may be termed a "repairing system" as a most wise and beneficent arrangement.

The human body is constantly exposed to morbific influences, unhealthy effluvia which derange its healthy action, until one or more organs fail to perform their functions properly, and the impurities that should be eliminated are retained.

Nature, under these circumstances, rallies all her forces and makes an effort to expel such offending matter from its domain. This we call remedial effort, or disease.

If the effort to purify the system is successful, health is restored; if not, death may ensue, or a long protracted illness of a chronic form may follow, nature eventually succeeding in restoring the organism to health.

We find men who have given drugs for a quarter of a century compelled at last to discard them as worse than useless, but still continue to visit the sick, counsel with them, advise as to diet, mental condition, ventilation, cleanliness, etc., and then leave the case entirely in the hands of nature to carry on the work of purification, or cure. The latter course is attended with threefold better success than when trusting to medicine.

> *"But of all the autocracy of nature in curing diseases, supplied by the records of medicine or of its actual practice, there is none which in point of extent, or in force of evidence, can compare with that furnished to us by the new school of practice, known by the name of homeopathy. Since the establishment of this system, an immense number of the sick in all civilized countries have been treated according to its precepts and practices; that is (according to the opinion of the best judges, in which opinion I entirely concur), nominally by drugs, but actually left to the resources of nature, or at most aided, it may be, by regimen and faith. It would be easy, however, to show that though as ingenious and as plausible as some other theories that have prevailed in medicine, it is like most of them utterly baseless as a doctrine of general application, and in its avowed practical principles, not merely unphilosophical, but impossible. It can be demonstrated that the treatment legitimately from it, of prescribing infinitesimal, in other words, imaginary doses of drugs, is utterly in capable of modifying the organism in any way except through the medium of the patient's mind. And yet, what is the character of the result obtained under this system of imaginary medication in the cure of diseases?*
>
> *When fairly weighed, do not these results exhibit, if not quite as large a proportion of cures as ordinary medicine, still so large a proportion as to demonstrate at once the feebleness of what we regard the best form of art, and the immense strength of nature in the same office". - Sir John Forbes, MD, FRS, Physician to the Queen's.*

In the above quotation, there are 2 points of much interest:

1. The writer admits, or rather declares, that there is no virtue what ever in homeopathy further than the influence of the mind and a proper regimen go, which I cheerfully endorse.

2. His conclusion is, that as many, or nearly so, recover under their treatment as under what he terms a more efficient system.

This I also endorse, with a firm conviction that many more recover under the imaginary system, as Dr Forbes terms homeopathy, than under the allopathic, to which Dr F. belongs.

If this be true, then, that the imaginary system cures as many as the big-dose system does, why is it not as good, yea, infinitely better, as the injurious effects of the drugs are avoided?

And it certainly does demonstrate the feebleness of what is regarded the best system, and the immense strength of nature.

Observation in the application of all systems of medicine, demonstrates the same thing, that in medicine of any kind, the benefits derived from them are meagre, compared with the all-powerful efforts of nature in restoring to health.

But notwithstanding many of the most able practitioners have fully tested the inefficiency of medicine, and pronounced unqualifiedly in favour of nature in restoring the organism to health, yet the people in some way think they must be drugged when sick; whereas, instead, they only need to "cease to do evil, and learn to do well."

They may certainly know that when their health fails, the fault is with them or their surroundings ; they have been violating physical law, either by a wrong diet, or intemperance in eating and drinking, by excess in labour, or deficiency in exercise, or some mental disturbance, or by a combination of all these.

The first thing, then, to be done, is to search out the cause, and immediately place themselves in a condition where nature can restore.

Our duty is to supply conditions, and nature performs the cure." - William Russell, MD, Health Institute, Battle Creek, Michigan, in "The Health Reformer", 1871.

Nature Never Rushes

"Nature does not follow Madison Avenue's "Feel Better Faster" but takes her time, slowly, as a tree grows, a little more each day.

Nature never rushes to get a sick man or beast on his feet; she also demands a slow and steady convalescence. Sick animals rest or sleep and refuse all food until nature has healed them. Isn't it proper, then, to expect that nature can do the same thing for the sick human if only she is given the opportunity?

Because I believe this so deeply, I have been in disagreement with doctors who stuff the sick, exhausted man with powerful toxic drugs and then are forced to use other drugs to "remedy the remedy," as it were.

Instead I "fast" the patient on simple vegetable broths or diluted fruit juices in order to give the exhausted body organs an opportunity to discharge their waste products and heal themselves.

Discarding both the use of drugs and the germ theory of disease opened the way for me to explore new methods of eliminating the stagnating waste products from the body.

While seeking additional methods to aid in this elimination of toxins, I began a study along original lines, here and in Europe of just how I could use the endocrine glands, particularly the liver, adrenal, thyroid and pituitary glands." - Dr Henry G. Bieler, MD in "Food is your best medicine".

"I will praise thee; for I am fearfully and wonderfully made". - Psalm 139:14

"All healing is of the mental and spiritual, not merely physical!

For, all healing of any nature, all healing must come from the divine; else there is no healing.

For body, mind, soul or spirit are one, even as Father, Son and Holy Spirit are One. For, they are the materialization of the concept of a three-dimensional individual entity or soul, or consciousness of an entity.

Thus, if one would correct physical or mental disturbances, it is necessary to change the attitude and to let the life forces become constructive and not destructive.

Hate, malice and jealousy only creates poisons within the minds, souls and bodies of people.

All healing comes from within, all healing comes from the one source, and the application of vibrations, of medicinal properties, mechanical applications or massages, mental or spiritual forces, only attune the vibrations of the body in such measures as to awaken them to the divine within.

For it is indeed as He has given: "In Him ye live and move and have thy being."

From Whom, through Whom all life, all healing comes, know that all healing must come from Him, The Christ He Is God.

All healing of every nature Must arise from One source, the Giver of life, the Sustainer of all.

Nature and Art in the Cure of Disease

"Many of those whom I have now the honour to address will remember how great an interest was excited when, the late Sir John Forbes published his book on "Nature and Art in the Cure of Disease."

The author of that little volume, in clear and vigorous language, with pitiless logic, characteristic truthfulness, and fearless candour, **pointed out the evils resulting from what he calls the over-active perturbative treatment and the mischievous polypharmacy which were then prevalent.**

Sir John Forbes was of the proposition that **"The power of Nature to cure disease is infinitely greater than is generally believed by the great body of medical practitioners and by the public.**

So great, indeed, is this power, and so universally operative, that it is a simple statement of facts to say that, of all diseases that are curable and cured, the vast majority are cured by Nature independently of art; and of the number of diseases that, according to our present mode of viewing things, may be fairly said to be

curable by art, the far larger proportion may be justly set down as cured by Nature and art conjointly."

He remarks that cases recorded by young practitioners in the medical journals afford additional evidence of a yet stronger kind, by showing, not simply the power of Nature to overcome natural disease, but to overcome this and the artificial disease superadded by what he very unpolitely calls "the energetic ignorance of the practitioner."

To the same effect, many years before, Lord Byron, when half-dead of a fever in Greece, wrote that he recovered on that occasion, and he adds that:

> *"Nature and Jove, being piqued at my doubts, did, in fact, at last beat Romanelli; and here I am, well, but weakly."*

Since the publication of Sir John Forbes's book, and in consequence of that publication, our views as to disease and its treatment have undergone a very great change. A purely expectant treatment is now as common as then it was rare.

It is now fashionable and orthodox to trust the curative powers of Nature, and to doubt the therapeutic power of art.

The pendulum has swung from one extreme to the other. At that time it was said:

> *"That according to the vulgar notion, the function of the physician consists in little else than the prescription or administration of drugs, and the function of the patient in little else than swallowing them."*

Now, on the contrary, that which was once said satirically, has come to be an almost accepted rule of practice; namely, that:

> *"The chief business of the physician is to amuse the patient while Nature performs the cure."*

Surely there is a priori good reason to believe that in the curative processes of Nature there is an orderly method of procedure, of which, by a diligent search, we may gain some useful knowledge.

That marvellous reparative power which cures a fever or an inflamed lung as thoroughly as it heals a wound or mends a broken bone, must certainly work after a definite plan in each class of cases.

The characteristic manner in which, during the progress of acute febrile and inflammatory diseases, the temperature rises, fluctuates, and finally falls, within a period which, for each disease, has a more or less exact limit, is one amongst other indications of such a definite plan and order.

And as conservative surgery has been much advanced by a careful study of Nature's method of healing wounds and repairing injuries, so it can scarcely be doubted that a thorough analysis of the more obscure phenomena of internal

diseases, and an investigation of their physiological sequence and relation ship, may afford us great assistance in our endeavour to conduct our patients safely through the storm of a dangerous sickness.

Indeed, I hope to carry you with me in my attempt to show that much knowledge of this kind is already available and ready for daily use.

We are all too apt to forget that disease is a natural, although an abnormal condition of the body; that pathology is, in fact, a department of physiology, and that the phenomena of disease result from the action of the normal structures and forces only modified by morbid conditions.

To take an extreme case, the time, perhaps, is not far distant when we may be able to give a physiological interpretation of even that destructive deviation from the normal processes of nutrition which results in the disease recognised as cancer.

Morbid Process

The rapid absorption and diffusion of all known poisons as an essential condition of their operation is one of the best established of physiological doctrines.

The interesting observations of Dr. Bence Jones demonstrated, not only the rapidity of absorption from the alimentary canal, but also the rapid diffusion of the absorbed materials out of the vessels even into the non-vascular tissues physiology is suspended.

I propose now to refer to some very obvious and well known phenomena as examples of morbid processes having a conservative or curative tendency.

Let us take, for in stance, the case of a patient who is jaundiced in consequence of mechanical obstruction of the duct by a gall-stone.

His urine is charged with bile, the result of a vicarious excretion of bile products by the kidneys. It will scarcely be denied that the elimination of bile through the urinary channels is, on the whole, a wholesome conservative process, tending, as it does, to free the blood from impurities, the retention of which might be injurious, and even fatal.

Yet this vicarious excretion is not effected without some functional disturbance, and even temporary structural change in the kidney.

An examination of bilious urine often discovers in it desguamated renal epithelium, tube casts, and sometimes albumen - pathological conditions which quickly pass away when the bile, resuming its natural course, ceases to be excreted by the kidneys.

Again, in a case of diabetes there is an abundant secretion of saccharine urine.

Now, whatever may be the primary seat and essential cause of diabetes, it is certain that the free elimination of the excess of sugar by the kidneys is essentially a beneficial and life-preserving process.

Yet this continued secretion of sugar not unfrequently induces structural changes which ultimately lead to a fatal result.

The persistent elimination of sugar by the kidneys has the effect of changing the

structure and the vital properties of their secreting cells, so that, in adapting themselves, as it were, for the secretion of sugar, they gradually become unfitted for the discharge of their own proper function - namely, the secretion of urine.

The renal gland-cells at length become opaque, and are found to contain a large amount of finely granular material with oily particles. The circulation through the kidney becomes impeded, the gland is congested, its secretion is albuminous, and suppression of urine is the immediate cause of death in a large proportion of cases of diabetes.

I believe that the familiar facts to which I have here briefly referred afford a good illustration of a principle which admits of a very extensive application to the interpretation of morbid phenomena.

A large number of diseases are caused by, or at any rate associated with, some form of blood-poisoning.

The morbid poisons and their products are eliminated through various excretory channels, more especially through the kidneys, the liver, the skin, the lungs, and the mucous membrane of the alimentary canal.

In many instances the elimination of the morbid poison causes much functional disturbance and structural change in the excretory channels through which the poison escapes; and these structural changes constitute the most striking outward signs and diagnostic marks of the diseases with which they are associated.

Thus we have the cutaneous eruptions of the acute exanthemata, the gastrointestinal symptoms of cholera, the bowel disease of dysentery and enteric fever, the hepatic disease which results from excess of alcohol or from the influence of malarious poisons, the renal disease, which may also be caused by an excess of alcohol, by the poison of scarlet fever, and by various other morbid poisons which I need not now stop to particularise.

Here jet me say that I am perfectly well aware that by a certain class of pathologists the doctrine of the elimination of morbid poisons is ridiculed as a vestige of a bygone, unenlightened age, well enough adapted to please the fancy of old women and ill-educated laymen, but quite unworthy the acceptance of scientific physicians.

One of this very advanced school lately intimated to me privately that, as a supporter of this exploded notion, he looked upon me as the priest of a decaying faith.

Now it is a remarkable fact that the opponents of the doctrine in question not unfrequently render it ridiculous by misrepresenting it; the misrepresentation being, of course, unintentional and apparently an unconscious result of confusion of ideas in the minds of the critics.

For instance, the disease which we call lead-colic is the pain with constipation experienced by a man who has been poisoned by lead.

The colic, of course, can have no existence apart from the sufferer, but the metallic poison which causes the colic was introduced from without, and may be again ejected from the system.

The Curative Efforts of Nature

The curative efforts of nature, and the conservative tendency of certain morbid processes.

There are few diseases which afford more striking illustrations of the principle in question than the various forms of Bright's disease, when traced through all their stages, from their origin to their termination.

Excluding from consideration those cases of albuminuria which are caused by a mechanical impediment to the circulation, the result, usually, of cardiac or pulmonary disease, it may be held as a doctrine generally true that the primary cause of Bright's disease in all its forms is a morbid condition of blood, and that, the structural changes which the kidney undergoes are the result of a conservative effort to excrete noxious materials from the circulation.

In cases of transient blood-poisoning, scarlet fever for example, the structural changes in the kidney and the functional disturbance may be only temporary, and the recovery complete.

But in other instances, as, for example, cases of chronic alcoholism - a very frequent exciting cause of Bright's disease, the continued passage of noxious products through the secreting structures of the kidney gradually destroys the tissues, and the gland either wastes and contracts, or becomes so structurally changed as to be unsuited for the discharge of its functions.

There is then a secondary blood contamination, a result of retained urinary excreta, and this uraemic condition may, in a variety of ways, bring about a fatal result. In illustration of our present subject, it may be observed that when the renal disease has reached an advanced stage, life is often prolonged for a time by the vicarious elimination of urinary excreta through the mucous membrane of the alimentary canal.

It is probable, too, that the dropsical symptoms which often complicate renal disease are the result of a conservative effort to free the blood from an excess of water, whose retention within the vessels would be more detrimental than its accumulation in the subcutaneous tissue and the serous cavities.

In further illustration of conservative morbid processes, Dr Johnson directed attention to certain changes of almost constant occurrence which are found in the heart, and in the minute arteries, after death from chronic Bright's disease; and dilated upon the doctrine. He then proceeded.

The Physiological Relationship of Organs

In these days of specialism, when the tendency is to dissever the various organs of the body, and to forget their Physiological relationship to each other, it is interesting and instructive to find that the deterioration of the blood which results from the degeneration of one organ, the kidney, may induce hypertrophy not only of the walls of the heart, but also of the walls of the minute arteries in every tissue throughout the system.

A good illustration this of the very ancient doctrine that:

"If one member suffer, all the members suffer with it."

Dr. Johnson next defended the teleological argument as applied to the structure and functions of the living body, whether in health or in disease.

"During the time which remains to me today, my purpose will be to show that, as practitioners of medicine, we have something more to do than to watch the phenomena of disease as passive spectators, and that in our endeavour to prevent, to mitigate, and to cure disease, we have a better guide than mere empiricism. Obviously, one of the most essential conditions for the successful treatment of disease is an exact diagnosis. If diseases essentially different are confounded together, it is impossible to arrive at any trustworthy conclusion as to the effect of particular remedies or plans of treatment. Nor does it suffice for successful treatment that a disease be correctly named and referred to its right place in a nosological system."

"A knowledge of the causes of disease, and of their modus operandi in the production of morbid phenomena, may be made practically useful in many and various ways.

The evidence obtained within the last few years of the manner in which cholera and enteric fever spread through the contamination of the air and drinking-water by the intestinal discharges has greatly increased our power of preventing these destructive diseases.

The ascertained influence of comparative dryness of soil and of atmosphere, resulting from improved drainage, in diminishing the mortality from phthisis (pulmonary tuberculosis or a similar progressive wasting condition) in various parts of America and in this country, forms another important contribution to practical and preventive medicine.

There is a numerous and important class of cases in which suppressed action of the skin by cold or by some unknown atmospheric influence is the exciting cause of disease in internal organs: for example, cases of acute renal dropsy, whether occurring during the progress of scarlet fever or unconnected with that disease; cases of catarrh and bronchitis; cases of acute pneumonia; and some cases of acute rheumatism.

Now there is a principle of practice common to all these cases, which is this: that if at the very commencement of the disease a free action of the skin can be promoted, the malady may often be cut short, or, if not entirely and promptly arrested, it will be greatly mitigated.

It is notorious that an ordinary catarrh may almost certainly be cured by free diaphoresis at the very commencement of the attack.

I have myself gone into a hot-air bath suffering from headache, pain in the limbs, and other indications of a severe incipient catarrh, which, if allowed to run

its course, would probably continue for a period of from 1 to 2 or 3 weeks; and in the course of 30 minutes the symptoms have been entirely removed by the action of the bath.

The same treatment by hot-air or blanket baths is certainly very efficacious in the early stages of acute renal dropsy, more especially when cold has been the exciting cause of the disease.

The object of the diaphoretic treatment in these cases is not, as some writers appear to imagine, to sweat urine through the skin, but, by diverting a large amount of blood to the surface, to lessen the congestion of the kidney, as dry cupping over the loins does in a less degree, and thus to increase the secretion of urine.

The objection which has been made to this sweating practice, that it tends to waste a portion of the water which is required to wash morbid products from the uriniferous tubes, affords a good illustration of the insufficiency of mere physics to explain physiological phenomena.

In connexion with this diaphoretic practice, Dr. Johnson referred to the treatment of catarrhal pneumonia, and stated that, by treatment promptly applied during the febrile prepneumonic stage, the amount of subsequent exudation may be greatly lessened. The treatment suggested by theory and approved by experience consists in the prompt restoration of the suppressed cutaneous secretion, by hot air or water, or wet sheet and blanket baths, an emetic of antimony or ipecacuanha (Carapichea ipecacuanha) when there is nausea without vomiting, and a calomel and colocynth (Citrullus colocynthis) pill, followed by a saline purgative. It remains for me now to sum up in a few sentences the main points which I have had the privilege to bring before you.

The Power of Nature to Cure All Curable Diseases

I have suggested that a belief in the power of Nature to cure all curable diseases is inconsistent with a disbelief in the existence of morbid processes having a conservative or curative tendency.

I have indicated various pathological phenomena, the conservative tendency of which appears to me indisputable; and I have endeavoured to show that, by a careful study of the functional and structural changes which result from disease, we may obtain most valuable indications for treatment - learning thereby both to do that which may aid Nature, and to avoid such means as may tend to thwart and hinder the natural curative processes. Again, I have intimated that it is difficult, and, as it seems to me, impossible, to reconcile a disbelief in the elimination of morbid poisons with a belief in the spread of disease by contagion.

Confirmatory evidence as to the elimination of morbid poisons is afforded by the disastrous results of repressive methods of treatment.

To take all possible precautions to exclude the cholera poison from the system, and then, when once it has gained an entrance, to endeavour to retain it there by opiates and astringents, are practical modes of procedure utterly inconsistent with

each other; unless, indeed, the object of this repressive treatment be to sacrifice the individual for the public good — to prevent the patient, at the peril of his own life, from scattering the seeds of disease and death amongst the community.

I believe that the success of our attempts to cure and to prevent disease depends mainly upon an exact diagnosis and discrimination of the various forms and shades and stages of disease; upon a correct interpretation of pathological processes and symptoms; **a careful avoidance of erroneous and misleading theories**; and, lastly, upon a prompt recognition of the exciting causes of disease, some of which may be avoided, some removed, while the influence of others may be in a greater or less degree counteracted by the timely employment of suitable means." - Dr George Johnson, MD, FRCP, Professor of Medicine Kings College, in "The Lancet", 12 August 1871.

Effects of the Moon and its Phases

On the State of Certain Mental Health Conditions

Lunacy: "condition of being a lunatic".

The word derives from lunaticus meaning "of the moon" or "moonstruck".

One who was most affected with his disorder at the change and full of the moon. In reference to intermittent periods of insanity, triggered by the moon's cycle. This influence by the phases of the Moon upon the behaviour of certain individuals was observed by Philosophers such as Aristotle and Pliny the Elder, who argued that the full moon had an effect upon the behaviour of insane individuals, by providing light during nights which would otherwise have been dark, and affecting susceptible individuals through the well-known route of sleep deprivation.

Published works we find the following:

"This moon hath, I must observe farther, a strange, but sad malignant influence upon the reason of many; and therefore their distemper is called lunacy. How it is that this planet at its change and full, and perhaps at other times, impresses the brain, so as to produce or encrease deliriums I am not to enquire philosophically; and perhaps should I do it, I should not have the satisfaction I desire. But there is a moral lunacy arising from the attraction of this world to a soul whose moral habit was before depraved, and now by the means of the world it becomes more and more distracted and maddened in its operations. Under the power of lunacy what mistakes are made false principles are imbibed, and an entire false conduct is built upon them. Friends, yea parents are treated as enemies, with malignity! enemies are courted and embraced' the man mistakes his own case. He esteems himself a man of great consequence, perhaps a king; rags are his royal ornament; his straw-bed is his throne; all around him are his slaves; he puts on the air of a monarch;

looks big, and talks with an air of triumph, and expects to be treated with all the ceremonious pomp of state. How eager is he to amass what he calls his riches poor creature he regards not his chains, he feels not their weight, and perhaps their rattling terrors are music in his ears. Such madness must needs excite pity in every one that has an humane and tender heart; and yet there is an insanity which is much more melancholy to the truly wise, to the thoroughly enlightened mind, and the more so, as the numbers possessed with it are so great, as there is a shew of reason in them, and as in the management of common affairs there appears no defect in the understanding; but above all is this madness most deplorable as it is truly criminal, and the soul with its everlasting interest is in the utmost danger.

Though the fountain of all this is in the corruption of the heart, and the total depravity which is in man's rational nature, yet this world (of which the moon is the representation) raises it to the higher pitch, and makes it the more apparent. Is it not the world in some shape or other that all these moral lunatics are fond off?" - in A series of letters to several friends by Richard Pearsall, in "The critical review, or annals of literature", Vol. 6, 1758.

"A gentleman, who in his youth had been conspicuous for his excellent endowments both of body and mind; but becoming insane, from some unknown cause, was at length so violently maniacal, that he was kept chained in prison for 30 years; and would eat straw, lime, his own dung, or any kind of nastiness. For the last 6 years, however, of his life, his fury was so much abated, in the intervals of the full moon, that he was no way disposed to hurt any body, and was fullered to go at large with in the area of the prison; and, though he still eat whatever came in his way, he had so much remaining sense, that he could sometimes recollect past events, would answer to questions which were put to him, and could read very well the French or Italian, as well as his native language." - Thomas Arnold, MD, in "Observations on the Nature, Kinds, Causes and Prevention of Insanity, Lunacy Or Madness", Vol.2, 1786.

Matthew 17

"Lord, have mercy on my son: for he is lunatic, and sore vexed: for ofttimes he falleth into the fire, and oft into the water. And I brought him to thy disciples, and they could not cure him. Then Jesus answered and said, O faithless and perverse generation, how long shall I be with you? how long shall I suffer you? bring him hither to me. And Jesus rebuked the devil; and he departed out of him: and the child was cured from that very hour. Then came the disciples to Jesus apart, and said, Why could not we cast him out? And Jesus said unto them, Because of your unbelief: for verily I say unto you, If ye have faith as a grain of mustard seed, ye shall say unto this mountain, Remove hence to yonder place; and it shall remove; and nothing shall be impossible unto you. Howbeit this kind goeth not out but by prayer and fasting." - Matthew 17:15-21

Exercise

"Work is the grand cure of all the maladies and miseries that ever beset mankind". - Thomas Carlyle, 1886.

"In connection with the foregoing, exercise to be productive of the best results should be without overstrain. A weak, run-down condition in a patient demands a storage of strength, that is, a saving of the little strength he may have and adding to it slowly in order to bring about a return to health.

This may seem, perhaps, a trivial thing to note here, but I have too often been called upon to patch up the results where the importance of this simple precaution was not recognized. Deep inhalations of fresh air properly and regularly taken will help in more instances than will tonics.

When a patient is anaemic teach him inhalation. It will enrich the blood, bring colour to the cheeks and increase muscular resistance. When possible, give such a patient a hill to climb daily, instructing him to keep the mouth closed in the ascent, going at first slowly but steadily to the top. A few months of this sort of exercising will show good results, as fresh air, fresh blood, renewed strength and less nervousness go together. As for bathing, the fact that the skin should be kept clean and soft, pores open but "not relaxed", goes without saying. It has been, and is now, a fad among a great many to bathe too much.

To the person who is over-worked and showing some of the symptoms just enumerated under the head of "Overstrain", there is danger in the too frequent use of the bathtub or spray. If the heart is strong and regular in its pulsing, the reaction from almost any form of bathing is a pleasure, but for those who have tobacco heart, or who are breaking down, the heart's action indicating nothing more than irritability, the cold bath or spray, or much bathing of any sort, becomes a source of danger.

The effect of any kind of bath should be watched closely, and if there is repugnance, dread, chill or weakness after, cut it out.

Giddiness, faintness, palpitation, loss of physical energy, whether induced by overstrain or old age, must be carefully guarded against." - Dr C. Spencer Kinney, MD, in "Auto-Intoxication, Overstrain, Exercise and Bathing", 1905.

"Never lose sight of the fact that nature must do the curing if it is to be done at all. No dose ever cured a man.
The Osteopath does not cure anything either.
He simply removes any obstructions that may have developed in Nature's pathway, so that normal circulation of the bodily fluids and forces may be resumed." *- in "Progress and Co-operation", The Right Way, October 1909.*

Chapter 43

The Role of the Soil, The Staff of Life

For, as pertaining to what has been well said to be the "staff of life", or, how that, as there are added to the physical body, the elements of the soil in their proper ratio, these bring to the balanced mental and physical reactions, the necessary forces for keeping the moral, the mental, the soul, the spiritual balance in the individual.

All that is for the sustenance of life Is produced from the soil.

Then there must be a return to the soil. Every man must be in that position that he at least creates, by his activities, that which will sustain the body, from the soil; or where he is supplying same to those activities that bring such experiences into the lives of all. For of dust the body is made, and of dust the sustenance of same comes.

"The synthesis of proteins in Nature is intimately bound up with the nitrogen cycle. The proteins made in the green leaf represent the last phase in this nitrogen cycle between soil and plant.

When these proteins are manufactured from freshly prepared humus and its derivatives, all goes well; the plant resists disease and the variety is, to all intents and purposes, eternal.

But the moment we introduce a substitute phase in the nitrogen cycle by means of artificial manures like sulphate of ammonia, trouble begins which invariably ends with some outbreak of disease and by the running out of the variety.

A simple explanation of the relation of soil fertility to health is thus provided.

All my own experiences and observations fall into line with this principle.

The cure, by growing the affected plants in freshly prepared compost. Imperfectly synthesized protein is then replaced by normal protein.

In all future studies of disease we must, therefore, always begin with the soil.

This must be got into good heart first of all and then the reaction of the soil, the plant, animal, and man observed.

Many diseases will then automatically disappear.

Soil fertility is the basis of the public health system of the future, and of the efficiency of our greatest possession; ourselves." - Sir Albert Howard, MA, FLS, Imperial Economic Botanist, to the Government of India, in "The Soil and Health", 1939.

The Role of The Soil, The Healthy Soil

"**Healthy soil depends primarily upon the life which, is in it.** This life consists of bacteria, fungi, and protozoa. Important as are the earthworms their work is of a different nature from that of the more lowly forms of life.

The work of the bacteria, fungi, and protozoa is first to prepare and then to supply the prepared food to the growing plants.

The relative importance of the lowly forms of life in the soil, because the main food supply of the plants is derived from the fungi and protozoa which the bacteria break down.

The reason why fungi and protozoa constitute the plants' main food supply is because the "activity" which is liberated from them is in the form of rays whose wave-lengths are sufficiently commensurate with those of the ray-form of the protein in the sap.

The commensurability of the wave-lengths of the two inter-acting kinds of rays enables the protein to attract and store those rays emanating from fungi and protozoa without the rhythm having to cross hastily the third bridge and to enter the storer-functioning portion, which renders aberrant the change of disintegration.

Indeed, so important is this commensurability that a mechanism exists between the radiated and attracted rays for the purpose of maintaining all possible harmony between them This mechanism is the mycorrhizal association, which is of the nature of a fungus, and probably of the one from which plants originally evolved. This mycorrhizal association may be regarded not only as a bridge between the plant's food and the sap that assimilates it, but also as the place where the radiated and attracted rays are brought into harmony.

The optimum conditions required by the bacteria include a requisite supply of oxygen and a necessary degree of alkalinity, which needs to be about the PH of 7.5.

These optimum conditions are maintained by the earthworms carrying the surface of the soil to the depths and by passing the soil through their bodies.

This work of the earthworms may be assisted by cleaning and sub-soiling where it is necessary, and an adequate supply of bacteria may be maintained by restoring all wastes to the land.

Cultivating, cleaning, and sub-soiling soil are fully described in Sir Albert Howard's admirable book, "Farming and Gardening for Health or Disease," and especially in Friend Sykes's Appendix D.

Wastes include sewerage, garbage, manures, and composts.

Wastes are best mixed and allowed to mature before being placed upon the land, and those that have been dumped may be reactivated by being thoroughly aerated. All wastes which cannot be matured on account of being too woody, and consequently impervious to the expander-action of bacteria, should be ashed and the ashes should similarly be placed on the land.

The object of allowing wastes to mature before restoring them to the land is to

enable all the bacteria to be reduced to the group that is most concerned in preparing the food for the plants. Maturation, which is generally completed in three months, results in the disappearance of all the pathogenic developmental forms of the Bacillus faecalis alkaligenes and the Bacillus coli communis, both of which themselves developed from the cocco-bacillus, which is the parent form of the bacilli under consideration. The group of micro-organisms that has most to do with preparing the food for the plants in an assimilable form includes the Bacillus faecalis alkaligenes, the Pseudomonas and the proteus bacilli.

These bacteria over-expand the fungi and protozoa. The over-expansion is effected by the amino groups of the polypeptides which form the main part of the radiator-functioning portion of the bacilli.

The similar portion of the fungi and the protozoa is the part that undergoes over-expansion. It is in this process that the organic nitrogen is released from their bodies. And the reason why this nitrogen forms the basis of the plants food is because the changes of dispersion, radiation, attraction and condensation, which are the most important changes the protein undergoes, depend upon the 7th element.

Finally, the protein cannot undergo these changes unless the nitrogen that is responsible for them is of organic origin.

Micro-organisms are less concerned with the most acute manifestations, which are caused by the rhythm being deflected in the first cycle that it describes following faulty food and climate rendering aberrant the change of disintegration than is generally thought.

Though micro-organisms may play an etiological role, in the production of so-called "infections" from within and infections from without, which are the only true infections, when the manifestations may be sub-acute and chronic as well as acute, the former may just as likely arise from the abnormal changes undergone by the protein, independently of micro-organisms.

The reason why there has never existed a full understanding of the nature of treatment is duo to the non-realisation of the facts that treatment acts as an invader and that its action is a direct one on the protein in the blood, which constitutes the king-pin in health and disease.

In health, this king-pin is concerned with the feeding of its host, whereas in disease it is called upon to protect its host against physical, chemical, and microbial agents, which are permitted to prey upon the protein, owing to the damage it has suffered as a result of deriving its sustenance from inferior quality food. Treatment is prescribed to repair this damage, and it is divisible into the same three classes as in the case of invaders, because its action upon twice damaged protein is no different from that of the physical, chemical, and microbial agents which prey upon the protein after it has suffered its first damage due to inferior quality food.

The physical, chemical, and microbial products thus come to act as secondary causes of disease." - Professor James Eustace Radclyffe McDonagh FRCS in"The Nature of Disease Institute, First Annual Report", 1948.

Chapter 44

The Role of Nutrition in Emunctology

"How doth the earth bring forth herbs, flowers, and fruits, both for physic and the pleasure of mankind." - Izaak Walton

"The natural tendencies to recovery have full play, and are often aided by the suspension of meddling treatment, and by judicious diet." *- Dr Symonds, MD in "The Lancet", 1842.*

"Thus, nature has placed a decisive guard against the admission into the bowels of any substance that may cause impediment to the exact working of the process of digestion." *- Joel Pinney in "The Antidote for the Causes that Abridge the Natural Term of Human Existence", 1847.*

"In regard to the diet of the patient. It is certain that what goes into the alimentary canal will be a very important factor in influencing the various phenomena of the patient. The toxic or impoverished condition of the blood must be corrected largely by the influence of this factor. The blood of the acute maniac is in both a toxic and impoverished condition. The toxic element is perhaps the more important." - Dr John W. Givens, MD, Superintendent Idaho Insane Asylum, in "Some Suggestions as to the Treatment of Acute Mania", read at the 45th Annual Meeting of the American Medical Association, 1894.

"We have no specific to combat the action of the germs, so we must fortify the inherent power of the blood to defend itself, and this is best accomplished by attention to nutrition." - Dr Louis Faugeres Bishop, MD in "JAMA", 20 February1904.

"As a tissue and blood builder no medication equals food." - Dr Louis Fischer, MD, in "New York Medical Journal, and Philadelphia Medical Journal",1905.

"The disease is due to indigestion, fermentation, and decomposition of food in the stomach and bowels. From some cause the body has lost its resistance, and this is the consequence." - Dr John Henry Tilden, MD in "The Etiology of Cholera Infantum", 1909.

"In reality most so-called diseases are not diseases at all. They are merely symptoms, and the vast majority of our diseases can be traced back to faulty food, defective excretion, etc..." - J. Ellis Barker in "Chronic Constipation", 1927.

"The discovery of the effects of deficient and ill-balanced food on the gastrointestinal tract is "one of the most significant contributions to the role of nutrition in preventive medicine." This discovery was made by feeding monkeys on diets having a number of faults-poverty of vitamins and mineral elements and excessive richness in carbohydrates: faults common in human dietaries." - Sir Robert McCarrison, MD, FRCP, in "Nutrition in Health and Disease", British Medical Journal, 26 September 1936.

"I was greatly influenced by Professor Ancel Keys, the American physiologist who first developed the idea of a Mediterranean Diet. It was the food, the diet, the exercise (everyone walked everywhere), and it made a lot of sense, from what we now know from the independent science about the optimum way of exercising. Everything was drowned in olive oil, lots of vegetables, oily fish." - Dr Aseem Malhotra, MD in "I News", 7 July 2017.

***"That which we eat, becomes."** - Rui Alexandre Gabirro*

What is the point for an Emunctologist to understand and be an Expert in the functioning of the Emunctory System and in the Art of Healing the Body from Toxaemia if he understands not Diet, not diet as written in "books", or given in "schools", rather that which is only taught by the School of the Hospitallers Order of the Good News in its Clinical Nutrition Course.

The Emunctologist is thus taught, how to correctly prevent disease by changing the chemistry within the body, by the use of nutrition as a therapeutic agent.

Thus the Emunctologist learns how to Avoid Eating Foods that are as Destructive Forces to the Body.

The clinical nutrition course covers the foundations of what and how causes toxicity in the body and the Emunctologist must be conversant with the Principles and Foundations of how Food, either in their own or in combination with others affects the body, either providing nutrition and medication to same, or becoming a burden to the system, in detriment to the human frame.

He also understands that, the more processed food is, the less nutrients is has.

The Emunctories

"It would appear that in the beginning of the practice of medicine the alimentary tract was given due consideration.

Thus, the early writings are replete with observations upon the action in health and in disease of the "primae viae".

And, even at the present time this combination will not permit itself to be forgotten or abused, for long.

There is a great deal of truth in the adage, "He dug his grave with his teeth."

Much of the so-called food is not food at all in the physiological sense, and the remainder is but an approximation to the real thing.

However, all that goes in must come out, and such parts as can not be assimilated and converted into energy are in fact so much refuse serving no purpose except to clog up the machinery.

The removal of such "by-products" together with the natural waste of the body is the object and function of the Emunctories.

And the observer frequently will be amazed at the fairly successful manner in which one or all of the Emunctories in a certain patient have carried an overload for years. Also he will be gratified by the way they will respond to a treatment which is encouraging but not drastic.

Frequently in a few weeks such a patient can be made a new man. By such means many patients with complicated chronic diseases are greatly benefited." - in "The California Eclectic Medical Journal", 1920.

Clinical Nutrition

The field of Clinical Nutrition is fundamental for the Emunctologist.

The Book Clinical Nutrition, published by the Order should be read and understood.

A good understanding, and the correct application of Food, both constitutes and makes for that which is: The Difference Between Health and Organic Disease.

In food, it is important to know those elements and properties that each carries and contains such as: Vitamins, Enzymes or Minerals.

Nutrition in Health and Disease

"The newer knowledge of nutrition is the A greatest advance in medical science since the days of Lister, it will do for medicine what asepsis has done for surgery." - McCarrison, in Brit. Med. Jour., 26 Sept. 1936, in the inaugural address of the Section of Nutrition at the annual meeting of the British Medical Association in 1936.

"Food is thus the greatest of all factors on which the efficiency of the function of nutrition depends. It is the foundation of health; chief amongst the armaments of medicine against disease.

What are the materials wherewith the function of nutrition is effected and whence are they derived?

They are and the digestion products; oxygen, water of protein, fats, carbohydrates, mineral elements, and vitamins.

It is in most cases the patient who must be treated rather than the disease from which he suffers and in this treatment nothing is so important as maintaining nutrition. In the last resort the patient must, with remarkably few exceptions, heal himself, and it is by adequate nutrition that he can best be put in the way of doing so.

The development of kidney stones in the Chinese has been studied by Gray (Chinese M. J., June 1936), who concluded that a disorder of metabolism, combined with lesions of the urinary epithelium from trauma, obstruction or a severe vitamin A deficiency, was responsible." - Dr Francis Lowell Burnett, MD in "Nutrition, Health and Disease", 23 September 1937.

The Role of Nutrition in Emunctology

"Hygiene enters alike into the prevention and management of diseases.

The name suggests more especially measures concerned in the preservation of health; but, in therapeutics, all measures, not medicinal, may be distinguished as hygienic. I shall use the term with this breadth of application. And it will be a natural division of the subject to direct attention, first, to hygiene in health, and, second, to hygiene in disease.

It is a correlative truth that everything which impairs health or depresses the vital powers, favours the occurrence of disease.

The system is prepared to endure and recover from disease in proportion to the previous completeness of health and the degree of constitutional vigour. And, of the cases of acute diseases developed in persons suffering from wear and tear, how much of the fatality is due to the diminished power of resistance incident to the antecedent morbid state!

The "Mens Sana in Corpore Sano" (Healthy Mind in a Healthy Body), is best secured by nutritious supplies abundant and varied.

A striking improvement in the practice of medicine, of late years, relates to diet.

Physicians have learned to appreciate, more than formerly, the value of supporting treatment in fevers and other acute diseases, and to regard alimentation as an essential part of this treatment.

They have also learned that it is a great object in various disorders and chronic affections to build up the powers of the system, and that this is to be done by conjoining with other measures nutritious food.

Now it is only an extension of this fact to say that more or less of the morbid phenomena pertaining to the progress of acute diseases are due to a suspension or

impairment of the processes involved in nutrition.

If patients affected with acute diseases may die from inanition, the latter must play an important part in the production of the phenomena manifested in connection with the diseases; and this must be true of cases which end in recovery as well as of those which terminate fatally.

Deficiency of assimilation originates the symptomatic phenomena, in acute diseases, to a greater or less extent, and here is a source of danger in a greater or less degree.

In other words, the symptoms which represent the condition of a patient affected with an acute disease, spring, in part, directly from the disease, and partly from the want of appropriation of fresh supplies for nutrition.

Innutrition, in a pathogenetic point of view, has not been sufficiently considered.

There is reason to believe that it forms a constant, and often a very important element in acute diseases; and the practical bearing of this fact is of great importance. It is fair to assume that the effects produced in a healthy person by withholding food, may also result from the want of nourishment in disease.

If starvation be not less fatal in the latter case than in the former, the morbid phenomena, it may be reasonably supposed, are essentially the same in both cases.

The practical conclusion based on the statement just made is obvious.

It is an object in the management of acute diseases not to withhold nutriment, but to promote the assimilation of nutritious supplies. In many diseases this is the great object in the management, taking precedence of any known curative remedies. The object always exists, but the extent to which it can be accomplished varies according to the nature and seat of the disease, together with a host of incidental circumstances.

The object is the basis of a principle which may be laid down as applicable to the treatment of all acute diseases, viz., alimentation is important to the fullest practicable extent. I need not stop to argue that the vital powers are to be preserved by a nutritious diet conjoined with other hygienic measures.

I have just now alluded to air as an element of hygiene in disease. Of the various hygienic conditions, perhaps, to none has attention been more directed, of late years, than a sufficiency of breathing space and adequate ventilation." - Dr Austin Flint, MD, Professor of Principles and Practice of Medicine, Bellevue Hospital Medical College, and Long Island College Hospital, in "Conservative Medicine as Applied to Hygiene", The American Journal of the Medical Sciences, 1863.

> *"Be not among winebibbers; among riotous eaters of flesh: For the drunkard and the glutton shall come to poverty: and drowsiness shall clothe a man with rags." - Proverbs 23:20-21*

"Resistance to infection may be greatly reduced by deficient diet. A deficiency in the diet of vitamin A or of vitamin C appears quite definitely to lower resistance to infection. In certain cases a lack of the vitamin B complex may also do the same thing. A lack of vitamin D [per se] cannot be said to have a proven effect in lowering resistance [such lowering when it occurs is usually due to associated deficiency of vitamin A]. It seems probable that the existence of a partial deficiency [of vitamins] may result in loss of resistance to infection." - S. W. Clausen, 1935.

"Vitamin E deficiency on the nervous system and the skeletal musculature. Vitamin E free diets, lead to the development of symptoms of neuropathic disturbances, which express the nutritional effect itself on the nervous system." *- in "Effects of Chronic Vitamin E Deficiency on the Nervous System and the Skeletal Musculature in Adult Rats", 1938.*

Faulty Food in Relation to Gastrointestinal Disorders

"**I propose in this lecture to propound the thesis that much of the gastro-intestinal disorder of civilised peoples at the present day is due to faulty food.**

In doing so I shall present evidence of the incidence of such disorder among civilised communities and of its comparative absence among certain races living under more natural conditions; and contrast, in general terms, the food habits of the former with those of the latter.

I shall refer to the special relation of perfect food to the functional perfection of the gastro-intestinal tract; and from these sources advance presumptive evidence of the effects of faulty food in impairing the functional perfection of the digestive system.

Experimental evidence of these effects will then be given and attention directed to the applicability of the experimental results to the genesis of certain acute and chronic gastro-intestinal disorders. Finally, I shall argue that faulty foods, capable of causing similar effects in man to those produced experimentally in animals, are widely made use of at the present day.

Having thus introduced the subject to your notice as students of public health I shall leave you to examine for yourselves in the wards, the clinic, and the home the truth of the doctrine I have propounded.

Prevalence of Gastrointestinal Disease

It was recently stated by a public health administrator in England that 25%. of all cases seeking relief at our clinics did so for gastro-intestinal disorders.

So far as my memory serves me the statement was made in order to emphasise

the necessity for a study of the setiological factors concerned in the production of this great mass of sickness. It has, too, been pointed out within the last few months that the alarming increase of cancer among town-dwellers in Great Britain is due, in the main, to the increasing prevalence of gastro-intestinal cancer.

These facts demand the close attention of all students of public health, for if by any means we can prevent gastro-intestinal disorders we shall relieve civilised communities of one-quarter of their sufferings.

In the fascinating pursuit of pathogenic organisms as causes of disease, we are apt to overlook the claims upon our consideration of sufferers from non-infectious maladies the claims, for instance, of the dyspeptic or of the sufferer from colonic disease.

Possibly this is due to the fact that the dyspeptic rarely dies of dyspepsia nor the subject of colonic disease from colitis.

Their discomforts, not being catching, are no more to their neighbours than a source of irritation; consequently their claims on the consideration of the hygienist are overshadowed by the multitude's demand for the elimination of the microbe.

The multitude does not know, and we ourselves often forget, that the activities of the microbe as a pathogenic agent are very often dependent on those very conditions of life which give rise to the discomforts and sufferings of the victims of such maladies as indigestion and mucomembranous colitis.

These conditions of life and of imperfect nutrition frequently prepare the soil of the body for the rank growth of bacterial agents.

Fortunately, within the last few years the attention of investigators of disease has been directed into new channels of inquiry, channels which take cognisance of the influence of negative factors in the production of disease as well as of positive factors.

Food Balance and Deficiency Diseases

We are beginning to appreciate the wider significance of the negative factors in the production of disease in general.

Chief amongst them is food deficient in some ingredient essential to the body's well-being, such, for instance, as vitamins, suitable protein, iodine, phosphorus, or calcium.

It sometimes happens that one such essential is present in the food in insufficient quantity. Then metabolic harmony ceases or becomes discordant and "deficiency disease" results.

It is necessary to emphasise that "deficiency disease" is not a question merely of deficiency of vitamins, but of deficiency of any essential requisite of a perfect food.

Nor is this all, for in practice deficiency of one essential often means excess of another; such, for instance, as relative deficiency of vitamin B in the presence of an excess of starch or relative deficiency of iodine in the presence of an excess of fats; the excesses may themselves give rise to relative deficiencies of other essentials, especially of those present in the food in relatively small quantities.

Lack of balance of the food is a fault second only in importance to actual want of some essential ingredient.

The food faults met with in practice are thus often compounded of deficiencies in association with excesses.

The importance of adequate food balance is illustrated by even the purest of "deficiency diseases", such as scurvy, concerning which Pitz and Lewis have shown that adequate provision of other food essentials will delay in guinea-pigs the onset of scurvy, induced by lack of vitamin C, and prolong their life.

The same is true of other deficiency diseases, such as polyneuritis columbarum, induced by lack of vitamin B.

My own researches have impressed the importance of perfect food-balance upon me with increasing force within the last few months, since I have been able to show that an excess of fats or of unsaturated oleic acid in the food may cause a relative deficiency of iodine and enlargement of the thyroid gland (goitre).

It is necessary also, in this connexion, to recognise a further fact-namely, that one cannot in practice dissociate from the effects of deficient and ill-balanced foods, those of bacterial or protozoal agencies whose ravages have been made possible by the faulty food.

My remarks today, therefore, are to be considered from these broader aspects namely; of food deficiencies in association with food excesses and with the fortuitous intervention of microbic or other pathogenic organisms.

Abdominal Health in Certain Himalayan Races

In considering gastro-intestinal disease in the mass, the realisation is forced upon one that since it is so common it must have a very common cause.

It is helpful, in endeavouring to ascertain the cause of a malady widely prevalent in one community or race, to contrast the conditions of life of such a community with those of another that is free, or comparatively free, from the malady in question.

My own experiences have afforded me this opportunity in the case of gastro-intestinal disorders.

For some 9 years of my professional life my duties lay in a remote part of the Himalayas, amongst isolated races far removed from the refinements of civilisation.

Certain of these races are of magnificent physique, preserving until late in life the characters of youth; they are unusually fertile and long-lived, and endowed with nervous systems of notable stability.

During the period of my association with these peoples I never saw a case of asthenic dyspepsia, of gastric or duodenal ulcer, of appendicitis, of mucous colitis, or of cancer, although my operating list averaged over 400 operations a year. They were remarkably infrequent.

The occasions on which my attention was directed to the abdominal viscera of these people were of the rarest. I can recall most of them occasions when my

assistance was called for in the relief of strangulated hernias, or to expel the ubiquitous parasite-Ascaris lumbricoideg.

Amongst these people the abdomen oversensitive to nerve impressions, to fatigue, anxiety, or cold was unknown.

Their consciousness of the existence of this part of their anatomy was, as a rule, related solely to the sensation of hunger.

Indeed, their buoyant abdominal health has, since my return to the West, provided a remarkable contrast with the dyspeptic and colonic lamentations of our highly civilised communities.

Searching for an explanation of this difference in incidence of gastro-intestinal disease in the two peoples I find it, in the main, in 4circumstances:

1. Infants are reared as nature intended them to be reared-at the breast. If this source of nourishment fails they die; and at least they are spared the future gastro-intestinal miseries which so often have their origin in the first bottle.
2. The people live on the unsophisticated food of nature; milk, eggs, grains, fruit, and vegetables. I suppose that not one in a thousand of them has ever seen tinned salmon, chocolate, or a patent infant food; less sugar is imported into their country in a year than is used in a moderately-sized hotel of this city in a single day.
3. They are eminently a teetotal race.
4. Their manner of life requires the vigorous exercise of their bodies.

Faulty Food

It is not that the races to which I have referred live under hygienic conditions superior, as to housing and conservancy, to those of the masses in the West; on the contrary, in both these respects their conditions of life are most primitive.

Nor in their agricultural struggles with Nature have they acquired any peculiar immunity to the effects of faulty food; they are, indeed, as susceptible as others to these effects, as the following occurrence illustrates.

It fell out that the cultivatable lands of one of these races were no longer sufficiently extensive for the increasing population. To meet this it was decided to colonise another tract never previously cultivated. A dozen families were settled there and they made shift to grow upon its granite and infertile soil such grains as they could.

My attention was directed to their efforts, and more especially to the results of them, when 10 out of 12 adult young men developed paralysis of the lower limbs due to lathyrism, a rare malady resulting from the disproportionate use in the food of the vetch Lathyrus sativus.

These settlers, finding it impossible to grow a sufficiency of wheat, had cultivated the hardy vetch and used it in too high admixture with their scanty

stores of wheat. The result was the development of paralysis of the lower limbs among the male population, while the female members of the settlement were unaffected.

For although in the case of lathyrism the difference in incidence of the disease in the two sexes is more marked than in any other nutritional malady known to me, yet it is in some nutritional diseases a very striking feature.

We see, then, that as exemplified by certain Himalayan races and, as I find from recent reports in the medical press, by such races as those of Upper Egypt, enforced restriction to the unsophisticated foodstuffs of nature is compatible with fertility, long life, continued vigour, perfect physique, and a remarkable freedom from digestive and gastrointestinal disorders, and from cancer.

I must confess that with these examples before me I find myself in accord with Hindhede, who affirms, and on unequivocal evidence-that the two chief causes of disease and death are food and drink.

Contrast of Primitive and Civilised Diet

Let us now for a moment contrast the food of these primitive people with that of more highly civilised communities.

The former are or have to be-content with natural foods: milk, eggs, grains, fruits, and leafy vegetables. These natural foods "the protective foods" as McCollum has named them-provide in proper quality and proportion the proximate principles and vitamins necessary for nutritional harmony, and the proper vegetable residues for the healthy evacuation of the bowels. But the case is different with civilised man.

No longer is he content with the unsophisticated foods made in Nature's laboratory with "herbs bearing seed" and with "every tree in the which is the fruit of a tree yielding seed".

To him these are still "for meat", but preserved, purified, polished, pickled, and canned. Some he extracts and distils with the object of procuring concentrates agreeable to his taste.

His animal food he heats, dries, freezes, thaws, and stores.

One way or another by desiccation, by chemicals, by heating, by freezing and thawing, by oxidation and decomposition, by milling and polishing, he applies the principles of his civilisation-the elimination of the natural and the substitution of the artificial-to the food he eats and fluids he drinks.

With such skill does he do so that he often converts his food into a "dead" fuel mass, devoid of those vitamins which are to it as the magneto's spark to the fuel mixture of a petroldriven engine.

Unmindful, too or more often ignorant, of the composition of the fuel-mixture with which he charges his human machine, he joins deficiencies of some essentials with excesses of others, heedless that the smooth running of his bodily functions bears intimate relation to the ordered balance of these essentials.

I am not at the moment concerned with the circumstances of civilisation-expediency, penury, prejudice, ignorance, or habit-which have compelled man into. this dangerous course; it is sufficient for my purpose that these circumstances exist, and that, in consequence of the food habits they have fostered, normal bodily function cannot be sustained, and-let me emphasise this point, gastro-intestinal function is one of the first to suffer.

This truth is made manifest by the clinical evidences of disease that are first to appear in wild monkeys fed on deficient and illbalanced food: loss of appetite, depraved appetite, vomiting, diarrhoea, dysentery, anaemia, unhealthy skin, asthenia, and loss of body-weight.

If the faulty food be persisted in, other symptoms manifest themselves later, due, in the main, to malnutrition of the central nervous system; but it is the functions of the gastro-intestinal tract, the functions of digestion, absorption, and assimilation, that are among the first to fail in consequence of faulty food.

These are the signs that our ship is running upon the rocks, and as good pilots we must be aware of them; I often think that we are apt to assume more readily the office of salvors of wrecks than of pilot,s whose function it is to prevent them.

Not only is functional failure of the digestive system an early evidence of faulty food, but the gastro-intestinal tract is often the first to exhibit clinical evidence of infection by pathogenic organisms in consequence of it.

Let me illustrate this last point by an experience in my own laboratory.

Thirty-six wild monkeys were captured in the jungles of Madras and transported with the least possible delay to my laboratory in the hills at Coonoor.

They were in perfect health and full of vigour-wild things usually are. I had in these animals perfectly normal tissues to work upon: a unique opportunity to observe the first clinical and pathological effects on normal tissues of the agent, faulty food, with which I was working.

Each of these animals was placed in a separate cage, and all were confined in the same animal room.

One attendant looked after them all. Twelve of them were fed on natural food, the remainder were fed, some on food deficient in vitamins as well as ill-balanced; some on natural food in which the living essences had been destroyed by sterilisation.

Those that were naturally fed remained free from intestinal disease; those that were fed on deficient and ill-balanced food and on sterilised food developed, within a short time in the majority of cases, diarrhoea or actual dysentery.

Here, then is an unequivocal instance not only of the effect of faulty food in inducing a specific disease such as dysentery, but of the protection against it that is afforded by a natural and well-balanced food.

Purposes of Food

The purposes which perfect food subserves. Every one recognises that food is taken into the body to repair tissue waste, to supply energy, and to provide the

proper medium for the chemical reactions of the body. But do we always visualise these functions of food in relation to the organs of digestion themselves, and to the work to be done by the gastro-intestinal tract.

If we did I think we should have no difficulty in realising the special effects on these organs of an insufficient supply of proteins which rebuild the digestive tissues and make good their waste, or of those constituents of the food which supply energy for the production of the digestive secretions and the movements of food along the digestive tract, or of salts which provide the proper medium for the chemical processes of digestion, or of vitamins which activate the cells of the digestive system to healthy function.

The effects of deficiency of these essentials must of necessity be manifested in failures of digestive, absorptive, assimilative, and motor functions of this important region of the body.

It is not necessary to make laboratory experimentation to prove that if a woman lives on white bread, margarine, condensed milk, and tea, with a minimum of imported meat and boiled potatoes, she is prone to suffer from such digestive disorders as dyspepsia and colonic disease.

For such a diet does not contain a sufficiency of proteins to rebuild the tissues involved in digestion, assimilation, and evacuation of the bowel contents; it does not contain a sufficiency of vitamins to activate the cells of the digestive system to healthy function; it is ill-balanced, and by its excessive richness in starch it favours the development in the digestive tract of fermentative organisms, and makes relatively more deficient the vitamins necessary to healthy cellular action; nor does it contain a sufficiency of vegetable residue, of cellulose, waxes, and vegetable salts to ensure natural action of the bowels.

Nor do we, I think, always consider the dependency of one constituent of the food upon another for its share in the maintenance of nutritional harmony.

We know that if such essentials as protein and inorganic salts be not provided in adequate quality and quantity growth must flag and repair of body

waste must fail or cease; but do we realise that the utilisation of suitable protein and of suitable salts is dependent on the presence in the food of a sufficiency of vitamins? Or that the efficiency of vitamins is dependent in considerable measure on the adequate supply of these proximate principles? If the tissue waste of the gastro-intestinal tract be not made good, whether in consequence of insufficient supply of suitable protein or of its insufficient utilisation, then must the production of digestive juices fail, the mechanism of absorption and assimilation flag, the neuro-muscular control of the gastro-intestinal tract become inefficient, and the tissues of the tract become the prey of pathogenic organisms.

It is thus that such a nutritional disease as pellagra may arise, and thus that the manifold varieties of gastro-intestinal disorder due to failure of digestive function may come into being. It is unwise to consider any of the essential ingredients of food, whether proteins, carbohydrates, fats, salts, water, or vitamins as independent of the assistance derivable from their associates in the maintenance of digestive and nutritional function.

No doubt some of these have special relations to others, as, for instance, that of iodine to fats, that of vitamin B to carbohydrates, that of vitamin A to lipoids, calcium, and phosphorusholding substances, and that of vitamin C to inorganic salts.

But whatever be their special relations one to another they are all links in the chain of essential substances requisite for the harmonious regulation of life's processes; if one link be broken the harmony ceases or becomes discord.

Man cannot live on vitamins or on proximate principles alone; each is complemental to the other, and deprivation of the one leads to starvation as surely as does deprivation of the other.

Experimental Evidence

For some years past I have been engaged in a study of the effects of deficient and ill-balanced food on the various organs and tissues of the body, as observable in animals fed on such foods under experimental conditions.

Having reached certain conclusions with respect to the digestive organs and gastro-intestinal tract in such animals as pigeons, rats, and guinea-pigs, I repeated my experiments in wild monkeys captured in the jungles of Madras so that I might observe the effects of faulty foods on animals closely related to man.

The foods I used were of several classes:

1. Foods deficient in all three classes of vitamins, in suitable protein, in fats, and excessively rich in starch.
2. Foods deficient in vitamins B and C and excessively rich in starch and fats.
3. Foods deficient in vitamin C only, in vitamin B only, and in vitamins A and B, but well balanced in other respects.

These classes of food presented for my purpose an adequate range of deficiencies alone, and of deficiencies in combination with excesses; they include many of the food faults observable in the dietary of many civilised people at the present day.

Let me now demonstrate the effects of these faulty foods on the digestive organs and gastro-intestinal tract.

But before doing so I must point out very shortly the simultaneous effects to which they give rise on the endocrine regulators of metabolism, the thyroid gland, the suprarenal gland, and the pituitary body; for it is to be remembered that the maintenance of healthy gastro-intestinal function is dependent in considerable measure on healthy endocrine action.

Laying emphasis on the fact that it is necessary to consider in relation to the changes produced in the digestive system by faulty food those that are simultaneously produced by the same agency in the endocrine system.

As an instance of this intimate correlation of digestive and endocrine function

and disorder, I may refer to the simultaneous production by faulty food of colitis, of depreciation of liver function, and of adrenal derangement.

The first is the most obvious clinical feature of the nutritional disturbance induced by the faulty food; the occurrence of the second may serve to account for the toxic symptoms from which the victims of mucous colitis suffer, and for the opinion held by some that mucous colitis is due to hepatic insufficiency; while the third suggests an explanation of the effects of fatigue, anxiety, and cold in precipitating attacks of mucous colitis in the mal-nourished subjects of colonic disease.

The malady is, indeed, as much a disorder of the adrenal glands as of the colon.

The data afforded by the specimens I have just shown you indicate that the profound changes resulting in the gastro-intestinal tract in consequence of the various deficient foods employed are similar in kind in the three species of animals I used-pigeons, guinea-pigs, and monkeys; it may be expected, therefore, that they will be similar in kind, if not in degree, in human beings whose dietaries have faults similar in kind if not in degree to those used in these experiments.

I think there is good reason to believe that the prolonged use of a moderately faulty food will lead to them as certainly as the less prolonged use of a more faulty food. Without attempting to analyse them too closely or to attribute to each fault a specific effect, we may, I think, draw from them certain broad conclusions:

1. The health of the gastro-intestinal tract is dependent on an adequate provision of vitamins. The absence of growth vitamins is capable of producing pathological changes in the tract which frequently assume the clinical form of colitis. This observation is of the highest importance in view of the frequency with which this malady is met with at the present day. Deficiency of vitamin C is especially concerned in the production of congestive and haemorrhagic lesions in the tract, and evidences of these may be found in animals which have not exhibited during life any of the clinical manifestations of scurvy in noteworthy degree. A state of ill-health of the gastrointestinal tract may thus be a pre-scorbutic manifestation of disease due to insufficiency of this vitamin, especially when associated with an excess of starch or fat or both in the food.

2. The disorder of the gastro-intestinal tract consequent on vitamin deficiency is enhanced when the food is ill-balanced.

3. The pathological processes resulting in this situation from deficient and ill-balanced foods are:

a) Congestive, necrotic, and inflammatory changes in the mucous membrane, involving sometimes the entire tract, sometimes limited areas of it.

b) Degenerative changes in the neuro-muscular mechanism of the tract, tending to dilatation of the stomach, ballooning of areas of small and large bowel, and

possibly also to intussusception.

c) Degenerative changes in the secretory elements of the tract-of the gastric glands, the pyloric glands, the glands of Brunner, the glands of Lieberkuhn, and the mucous glands of the colon. These changes are such as must cause grave derangement of digestive and assimilative processes.

d) Toxic absorption from the diseased bowel as evidenced by changes in the mesenteric glands.

e) Impairment of the protective resources of the gastrointestinal mucosa against infecting agents, due to haemorrhagic infiltration, to atrophy of the lymphoid cells, and to imperfect production of gastro-intestinal juices. This impairment results not only in infections of the mucous membrane itself, but permits of the passage into the bloodstream of micro-organisms from the bowel.

f) It is to be emphasised that the pathological changes found in the gastro-intestinal tract are more marked in some individuals than in others; and that, while all of them may occur in one and the same subject, it is usual to find considerable variation in the incidence of particular lesions in different individuals.

To proceed with our investigation of the relation of faulty food to the common gastro-intestinal disorders of the present day. It is usually accepted as a proof of the causation of a malady that if an investigator by one agency or another can produce in animals, under controlled experimental conditions, the malady in question then this agency is the cause of the disease, or intimately associated with its causation.

Consider, then, that by means of faulty food:

1. Diarrhoea
2. Dysentery
3. Dyspepsia and gastric dilatation
4. Gastric and duodenal ulcer
5. Intussusception
6. Colitis, and
7. Failure of colonic function can be produced experimentally.

Faulty food is often at the bottom of their causation, and that the use of natural or well-balanced food from birth onwards will greatly militate against their occurrence.

I cannot remember that by means other than faulty food such a disorder as colitis can be so readily produced, if at all; for the experimental production of amoebic dysentery by the oral administration of Entamaeba histolytica cysts is not at all convincing. On the other hand, I have seen amoebic dysentery arise in deficiently fed wild monkeys, while others that were well fed escaped the disease, although subjected to the same risks of infection.

In this instance malnutrition had enabled the specific organism to implant itself in the tissues of the bowel.

If further evidence of the influence of faulty food in the production of these gastro-intestinal disorders be needed, it will be found in abundance in the medical history of the late war, during which these disorders were so often the consequence of faulty food.

In this regard our enemies unwittingly served one useful purpose; they forced us to concentrate attention on the immediate and remote effects of food faults on the human body.

But our ever-present enemies in peace-poverty, prejudice, ignorance, habit-are no less responsible in this regard; they, too, beneath the vaunted culture of our civilisation inflict upon numbers of our people an intolerable load of misery, which it is our duty to relieve.

I would, therefore, urge upon your attention a consideration of the effects of faulty food in relation to such acute disorders as infantile diarrhoea, dysentery, asking you, while remembering the bacteriological aspects of these maladies, to look upon them also from the point of view of faulty food.

The bacteriological path has led us far in our knowledge of preventable disease, but it will lead us further still if we traverse at the same time the paths of malnutrition that so often run parallel with it.

In relation to such chronic disorders as "mucous disease" in children, chronic gastro-intestinal dyspepsia, pellagra sine pellagra, colonic disease in adults, coeliac disease, gastric and duodenal ulcer, chronic intestinal stasis, the food factor in their production deserves the fullest consideration.

For, if the facts I have laid before you do not provide the whole explanation of their genesis, they are, I am convinced, intimately related to it.

Present Prevalent Use of faulty Food

Faulty food is largely used by many civilised people at the present day, I would ask you to consider first in this connexion the increasing tendency in modern times to rear infants artificially on boiled, pasteurised, and dried milks, and on proprietary foods, all vastly inferior to healthy mother's milk in substances essential to the well-being of the child-inferior not only in vitamins, but in enzymes, thyroid derivatives, and other essentials.

When, as is sometimes the case, mother's milk is itself harmful to the child, is not this largely the result, of her own disordered metabolism in many cases resulting from improper feeding before, during, and after pregnancy?

For mother's milk, like the milk of animals, may be deficient in certain respects if her food be deficient. The milk of stall-fed cows is not so rich either in vitamin A or in vitamin C as that of cows fed in green pastures.

Again, is not cow's milk-an important dietary constituent of young and old alike-gradually becoming a luxury reserved for the few? Vegetable margarines are replacing butter even among the richer classes. Fresh fruit, certainly in Great

Britain, is a comparative rarity, even on the tables of the rich.

Green vegetables are scanty, and such as there are are often cooked to the point of almost complete extraction of their vitamins and salts.

White bread has largely replaced wholemeal bread.

It is notable that, despite the food restrictions imposed upon the people of Belgium during the late war, the infant mortality and infantile diarrhoea decreased greatly a circumstance which was due to the organised propaganda encouraging mothers to nurse their infants, and to the establishment of national canteens which provided prospective mothers from the 5th month of pregnancy onwards with eggs, meat, milk, and vegetables. Again, fresh eggs are so expensive as to debar the masses from their use. Meat is at best, but poor in vitamins, and its value in these essentials is not enhanced by freezing and thawing.

Sugar is consumed in quantities unheard of a century ago, and sugar is devoid of vitamins which the cane juice originally contained.

The use of stale foods involving the introduction of factors incidental to oxidation and putrefaction is the rule, that of fresh foods the exception.

Can it then truly be said that the variety of natural foodstuffs consumed by Europeans protects them from any deficiency of vitamins? My own clinical experience justifies no such belief; rather does it point in the contrary direction.

Nor does it appear to be the experience of the compilers of the 38th Report of the British Medical Research Council, who write:

> *"From a consideration of dietaries consumed by the poorer classes in the towns of this country (Great Britain) one is led to suggest that no inconsiderable proportion of the population is existing on a food-supply more or less deficient in fat-soluble factor."*

Deficient, that is to say, in a vitamin one of whose cardinal functions is to maintain the natural resistance of the subject against infections.

That similar considerations apply in this country (United States of America) also appears from the experience of Osborne, who asserts that a large part of the food eaten by civilised people has been deprived of vitamin B by "improvements" in manufacture; and of Hess, who emphasises that latent and subacute forms of scurvy are common disorders of infancy due to insufficient intake of vitamin C. But the frequency with which deficient and ill-balanced foods are used is most apparent when the dietetic habits of persons in subnormal health are considered.

It will surprise those who study them to find how many there are, of capricious appetite, who habitually make use of foods sometimes deficient in calories for it is not the food presented to the subject that counts, but the food eaten and assimilated-and often dangerously deficient in one or more vitamins, in protein of good biological value, and disproportionately rich in starch or sugar or fats, or in all 3.

Infants fed on many of the proprietary foods in common use come within the category of the deficiently-fed, unless deficiencies are made good.

The food of young children is commonly low in vitamin-content, and in suitable salts and protein, while it is frequently disproportionately rich in starch and sugar, a circumstance which enhances the danger of vitamin-deficiency.

It may, indeed, be accepted as an axiom that the vitamin-value of a child's food is reduced in proportion to its excessive richness in carbohydrates.

But the ranks of the deficiently-fed do not include only infants and young children; they include also those whose food is composed mainly of white bread, margarine, tea, sugar, and jam, with a minimum of meat, milk, eggs, and fresh vegetables.

Even amongst those whose diet is more perfectly balanced, the commoner articles of food, as they are prepared for the table, are so low in vitamin-value that, unless they are enriched with a sufficiency of natural foods in the raw state, they are prone to cause ill-health, and especially gastro-intestinal ill-health.

Such is my experience in India, where this European patient "cannot digest vegetables or fruit", and never touches them as they carry infection, "or that one" suffers so from indigestion that he or she lives chiefly on custards and milk puddings; where milk is, of necessity, boiled and reboiled until as a carrier of vitamins it is almost useless; where meat is made tender by the simple device of boiling it first and roasting it afterwards; where every 3rd or 4th European child has mucous disease, the direct outcome of bad feeding.

So it is that the forms of food which such as these so commonly adopt are those most calculated to promote the very disorder from which they seek relief.

Access to abundance of food does not necessarily protect from the effects of food deficiency, since a number of factors-prejudice, penury, ignorance, habit-often prevent the proper use and choice of health-giving foods.

Who in the ranks of practising physicians is not familiar, among the well-to-do classes, with the spoilt child of pale, pasty complexion and unhealthy appetite, of sluggish bowel, and often with mucous stools or enuresis, who, deprived of the wholesome ingredients of a well-balanced natural food, craves for sweetmeats, chocolates, pastries, and other dainties as devoid of natural health-giving properties as their excessive use is common?

Constantly one encounters the anxious mother of the "highly-strung" "nervous" child "of delicate digestion", whose ignorance of essential principles of feeding is only excelled by her desire to do what is best for her offspring; who, guided by the child's preferences, supplies the means to convert it into a static, constipated, unhealthy-skinned adolescent, equipped with digestive and endocrine systems wholly unfitted to sustain the continued exercise of healthy function.

Or, again, who is not familiar with the overworked anaemic girl, static and with visceroptosis, acne or seborrhoea, and often times with vague psychoses, who ekes out a paltry wage for teaching, sewing, or selling, satisfying the cravings of her tissues principally with white bread, margarine, and tea?

Or with the languid lady, devoid of healthful occupation, who, living in the midst of plenty, deprives herself, for some imaginary reason, of substances

essential to her well-being? Or with the harassed mother of children, oppressed with the constant struggle to make ends meet, stinting herself that others may not want, exhausted by childbearing and suckling, worry, and too little of the right food? What wonder that such a woman is dyspeptic, and that "every bite" she eats "turns on her stomach".

Some there are, living in luxury, whom ignorance or fancy debars from choosing their food aright; others for whom poverty combines with ignorance to place an impassable barrier in the way of discriminating choice.

It is for us so to instruct ourselves that we may instruct such as these, and use our newer knowledge to the end that customs and prejudices may be broken and a more adequate dietary secured for those under our care.

We may, in our desire to promote the health, vigour, and fertility of our people, learn much from the practical farmer or stock-breeder whose experience has taught him that all these evidences of normal functional activity of the animal organism are dependent in the main on one great factor-perfect food-supply.

Conclusion

I have said enough to serve as an introduction to the study of this important subject, than which there is none more worthy of the consideration of those whose life is spent, or to be spent, in guarding the national health.

It seems to me that in regard to it we have 3 obvious duties:

1. Instruct the masses as to what to eat and why to eat it.
2. Apply the results of our science to the production of natural foods in abundance and to their widespread and cheap distribution rather than to the erection of institutions for the treatment of maladies due to their want.
3. And most important, ardently to pursue our investigations and the acquirement of knowledge.

In no department of human endeavour are the words from the Agrapha of Christ more pertinent than in their application to the study of the relations of food to health and disease:

> *"Let not him who seeketh, cease from seeking until he hath found; And when he hath found he shall wonder."*

- Dr Robert McCarrison, MD, D.Sc., FRCP in "The Lancet", 4 February 1922.

What are vitamins?

"**That vitamins are compounds absolutely essential in the food**, in order to maintain the weight of the body and produce growth, has been definitely proved. The lack of vitamins causes deficiency diseases, so named because they are due to lack of something in the diet. Vitamins, are present and are needed in such small quantities in the food that chemists have not yet been able to isolate them from the many other compounds which are in foods. For this reason, we know very little of the actual character of vitamins.

Three Types of Vitamins

According to a statement by Dr Carl O. Johns, formerly in charge of nutrition work in the bureau of chemistry, United States Department of Agriculture: Vitamins have been classified into 3 different types depending upon the functions which they have in promoting well-being and growth:

1. The first type is known as water-solution vitamins: and these are necessary in order to obtain growth from food. Lack of these causes beri-beri, which manifests itself by disease of the nervous system and by other symptoms. These vitamins are found in seeds, green plants, vegetables, in certain bulbs and fleshy roots, fruits, and in milk and eggs, as well as in certain organs in the animal body. The seeds referred to include beans, nuts, and the various cereal grains. When cereals are very highly milled in order to obtain a very fine white flour, a large part of the vitamins may be removed. Vitamins are also lost when rice is polished in order to remove the outer layers which contain most of the vitamins. It is for this reason that a diet consisting mainly of polished rice may cause beri-beri, while unpolished rice does not cause this disease.

2. The second type is known as Fat-Soluble Vitamins: and these are found in butter, eggs, milk, and in certain animal organs such as the heart, kidneys, and liver, and to some extent in other fats as well as in green vegetables. They also exist in smaller quantities in certain seeds. When fat-soluble vitamins are absent from the diet, animals and man are subject to a disease of the eyes, which appears to be related to xerophthalmia and which, if prolonged, may produce blindness. Best Source in Vegetables.

3. The third type is known as Antiscorbutic Vitamins: that is, those which prevent scurvy, which manifests itself by disease of the bones as well as in other ways. These vitamins are found in oranges, grapefruit, lemons, and other citrus fruits, and in green vegetables, such as tomatoes, spinach, and lettuce, and in eggs and raw milk. The dying of vegetables frequently destroys the activity of the antiscorbutic vitamins. The best source of vitamins is in the leafy parts of vegetables, and this is one of the reasons why spinach, lettuce, and cabbage are valuable foods." - in "The Nebraska State Medical Journal", January 1920.

The Important Part Played by Vitamins in Normal Physiology

Vitamin C

"Vitamin C deficiency interferes very seriously with the healing of fractures. Vitamin A does also, but to a less extent, and the detrimental effect of either hypo-vitaminosis D, or hyper-vitaminosis D is considerable." - Dr John Hertz, MD in "Studies on the Healing of Fractures, with special reference to the significance of the Vitamin content of diet", 1936.

Vitamin E

"One important conclusion is that vitamin A has little or no neurotropic action, and that vitamin E, the neurotropic factor of wheat germ oil, is more important in this connection than vitamin B1, or any component of the Vitamin B complex." - Dr L. Einarson, MD, Dr A. Ringsted, MD in "Effect of Chronic Vitamin E Deficiency on the Nervous System and the Skeletal Musculature in Adult Rats: A Neurotropic Factor in Wheat Germ Oil", 1938.

Gout and Rheumatism Etiology and Dietetic Treatment

"Dr W. H. Porter believes that defective oxidation is a chief predisposing factor resulting in one instance in rheumatism and in another producing gout.

The suboxidation state is due chiefly to the ingestion of oxidizable food products in larger amounts than there is oxygen absorbed through the lungs completely to reduce the proteid constituents to their end-products. Further, diminished food supply of poor quality may cause suboxidation; in this case progressive malnutrition causes anaenia, and with it insufficient oxygen occurs.

When the amount of oxygen taken up by the lungs is diminished, oxidation of the proteids falls to an abnormally low point, the excretion of urea decreases, and that of uric acid increases. If carbohydrates or fats are taken in large amounts, the oxygenating capacity of the body is exceeded, suboxidation results, and uric acid increases in the urine, while urea diminishes. Thus increase of uric acid in the urine is a symptom indicating an imperfect proteid oxidation and general malnutrition.

When the renal cells cease temporarily to act, failing to produce uric acid, a vicarious process occurs in the tissues, oxygenation of proteid substances forms uric acid in the tissue cells, and sodium urate immediately results.

This more frequently occurs in the cartilage cells of the first metatareo-phalangeal joint. Urate of sodium acts as an intense chemical irritant, exciting a local inflammatory process; a fibrinous exudate is thrown around the deposit, and

the local symptoms subside. Non-nitrogenous food products are directly oxidized to carbon dioxide and water, yielding no toxic bi-products; therefore the proteids are the source of these toxic and suboxidative conditions of the system. - New York Medical Journal, 1900, No.1112, p. 411". - in "The American Journal of the Medical Sciences", Vol. 120, 1900.

Have A Clear Brain

"Eat only nourishing food and that in sufficient quantity. Care should be exercised in the selection so as to choose only that which is adapted to the needs of the body, in view of one's habits and occupation.

The brain not only generates and feeds out power to the body, but it is the physical organ of thought. It needs to be free from all encumbrances in order to do its work to the best advantage.

Its hundreds of millions of electric cells, unhampered, will furnish an abundance of power for life's responsibilities. The nerves only convey power from the brain to the various parts of the body, controlling the circulation and nutrition, as well as feeding out force to tissues and muscles.

Nutrition is carried to the brain by the nerves. Anything that lessens the active vigour of the nerves clogs and renders less keen the brain, by depriving it of essential nutrition as a result of a stagnated circulation." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, Md., in "The New and Scientific Treatment of Chronic Diseases", 1914.

Diet in Nervous Disorders

"General Considerations: The astonishing neglect of the scientific method in the therapeutics of nervous disease is nowhere more striking than where diet is concerned.

Grasset's work, bristling with references, devotes hardly a page, and that in only the most general way, to the subject of alimentation. Oppenheim's scattered remarks about diet are traditional merely, indicating that he has given no real thought to the significance of the subject.

Of works in English the unsatisfactory nature must be known to all. It is true that a few scattered articles, more especially in the French literature, have drawn attention to the importance of a diet mainly of milk and vegetable products in persons supposedly predisposed to nervousness, by a constitution which the French call arthritic and former English writers lithemic.

Studies in metabolism have shown us how badly balanced is the diet of the average prosperous city dweller.

Excess of proteids and deficiency of carbohydrates, and sometimes of salines, is the rule.

When the defences fail, conversion of the proteins into the proper aminoacids is incomplete and the substances produced may act as nerve poisons.

Unfortunately too many of the modern consumer's carbohydrates are supplied in a form which eliminates from them substances of great advantage.

It is a pity that experimental proof of this opinion has been lacking until recently, so that due weight was not given it by most physicians.

Even the extensive clinical and laboratory researches conducted in England recently to establish the relative merits of bread made from commercial flour and that from whole wheat, permitted of no definite conclusion; for attention was too largely confined to the caloric value of the result in bread.

But that there is a substance of great importance for nutrition in that part of the cereal which is usually rejected in commercial preparation, is now experimentally proved by the production of nerve degeneration in animals fed solely upon polished rice.

Almost in the nature of an experiment too is the abolition of beriberi in the compounds where coolies receive unpolished rice instead of the polished product under the consumption of which beriberi prevailed.

Further evidence that whole cereals contain a nutritive substance of importance for the internal secretions is furnished by Chalmers Watson researches into the growth of the thyroid gland under different diets. He showed that on an exclusively flesh diet, thyroid gland of young rats underwent hypoplasia, whereas when oatmeal was the exclusive diet, the gland developed freely. The latter animals greatly exceeded in growth and capacity those fed only on flesh.

It is legitimate to infer from the foregoing facts (as we know that an animal fed on carbohydrates alone emaciates and dies quickly) that a substance of great value to the nervous system in particular is removed in the milling of grains, and that this cannot be replaced adequately by the addition of flesh.

Whether this substance exerts its action as a direct nutrient, or through the medium of the hemopoietic or other glands of internal secretion.

For in the regulation of the activity of the nervous system the secretion of the thyroid gland is an essential. Many cases formerly designated neurasthenia and hysteria are now known to be merely due to changes in thyroid secretion.

Were one to speculate, it might be supposed that the prevalence in our day of hyperthyroidism expressed the response of this gland to a vascular environment which insufficiently supplies it with pabulum for the work the body requires of it; and that it responds by a secretion which makes up in abundance for what it lacks in quality, and thus inaugurates a vicious circle which maintains itself.

One cannot here enter into the qualifying factors of this hypothesis, those for example furnished by fear and anxiety in stimulating the thyroid secretion.

Other important substances in the portion commercially removed from grain are calcium and the phosphates.

Although these are at present also in flesh, yet to obtain them in adequate amounts from this alone would entail a greatly excessive ingestion of proteid.

The thoughtless appeal to the carnivora as an example of eubolism forgets that these animals eat bones as well as the flesh. Now the bran is the bone of the wheat, hence many modern diets lack enough of phosphates and of calcium.

Now experiments have shown that calcium is one of the stabilizers of nerve activity, while potassium and sodium are its excitants. Phosphates are known to be a necessary pabulum of nerve. Deprivation of any necessary aliment leads to craving. The conscious expression of this may not be directed towards that which is lacking. It often expresses itself morbidly, such as in desire for alcohol, or in the peculiar longings of the gravid woman. It may manifest itself psychologically, as in the feeling of incompleteness of the psychasthenic.

Psychic Surroundings Must Be Favourable

This leads us to a most important matter in dieting against nervous disorders.

As it is not ingestion but assimilation at which we must aim, all the factors which make for this must be employed. Most important among these is enjoyment of the food. It must be cooked and served appetizingly. But even this is not enough: the psychological surroundings must be favourable.

Dejection or anxiety is most detrimental to proper digestion.

Preparedness for Food, Exercise, Intervals Between Meals

The highest degree of preparedness for proper assimilation occurs only when the digestive glands are free from the incubus of a preceding meal.

A loaded liver and an exhausted pancreas are not favourable.

The rapid circulation and oxidation produced by active exercise are the best preparation for the proper assimilation of food.

It should be evident that the frequent ingestion of food is detrimental to those persons susceptible to alimentary poisoning and its nerve inadequacy.

By perseveringly stimulating proper oxidation a patient is soon able to tolerate in the stomach without fermentation a large enough meal amply to nourish him.

Prolonging the intervals is the best preventive of food fermentation.

Firm Food Required, Causes of Bolting

Some of the food at least should be of firm consistence, so as to demand vigorous mastication in order to stimulate salivation.

This prevents the **bolting of food, a habit to which nervously impulsive persons are liable.**

Sometimes this habit has been bred in childhood because of the child's haste to finish his meal in order to play.

The habit of bolting food is part of a vicious circle, for it leads to malassimilation, which causes nervousness, which leads to impatience, which favours the bolting of food.

Diet for Epileptics

With this understanding then, consider in the first place the diet in epilepsy.

I shall not consider such symptomatic epilepsies as arise from coarse lesions of the brain, or those which occur in cases of defective development; although even in these, favourable diet can mitigate the patient's lot.

We believe that Epilepsy is fundamentally Toxigenic, whether it is manifested because of increased cerebral susceptibility, or whether **it occurs because of weakened defences against the absorption or neutralization of food of other toxines.**

Practically, however, it is clear that most patients are benefited and many cured if, a diet is imposed which minimizes the work of the metabolism of proteins and more especially during the subsidence of the vital activities during sleep.

This diet should, at the same time, facilitate rapid exchange by abundance of the saline constituents of the diet. Empirically, it has been known how favourable to such patients are an abundance of fruit and vegetables and a restriction of meat.

Diet Against Arteriosclerosis and Pressor Excess

A potent cause of nervous inadequacy is arterial hypertension. **The rôle of diet in producing this seems to be important.** Both purins and excessive nitrogen seem to lead to the formation of pressor (increase in blood pressure) substances.

Whether they do so by increasing the activity of the adrenal glands is unknown; but it is an explanation to be thought of in connection with this state.

It is often misnamed neutrasthenia. When the renal in addition to the hepatic function is diminished, nervous symptoms as the result of an unwise diet are even more apt to declare themselves; so that the regulation of the diet then is of even greater importance.

Diet in Cases of Drug Addiction

The craving for morphine or alcohol has often a basis in metabolic disturbances due to a diet or manner of eating which, though usual enough and without apparent injury to the average person, is yet highly injurious to the person in question. I believe that relapses after successful sanitarium treatment are frequently due to neglect of this factor.

The Period Depressions and Excitements Cyclothymic and Manic Depressive Psychosis

For the role of diet the exciting cause, and the means of cure in the subjoined case are most impressive:

Case: Recurrent mania from gluttony. S., was seen at the York Retreat during my residence there in 1907. For several years, she had recurrent attacks of excitement, with rise of temperature, rapid pulse, disorderly acts, filthy ways, obscene language. These would occur at the menstrual period, but only , every other month, and sometimes less frequently. Preceding and during the attack, the leucocytes in the blood were greatly increased.

On one occasion, 37,000 to the cubic millimetre were found. During the subsidence of the attack, in about ten days, the count would be normal.

Between the attacks, the patient might be regarded as normal, although her disposition was somewhat selfish and unreliable.

In the search for a cause, I one day minutely questioned a nurse concerning the habits of this patient, who, on account of the freedom given her between attacks, was not under continuous observation by any one.

I was told that she spent her afternoons in passing from one pavilion to another, taking tea in rotation with the nurses. On each occasion, she would eat abundantly of what was on the table, and this would go on most of the afternoon.

Moreover, she would spend all her money on sweetmeats and often more substantial things, which she would eat during the morning, seldom offering any to another person.

From these data, I theorized that **her maniacal attacks were the expression of the outburst of accumulated toxicosis due to her gluttonous habits.**

They were precipitated by the toxic wave of the menstrual period; but they did not occur every month because during the maniacal attacks the patient was practically starved, and insufficient time elapsed before the next menstruation to allow of sufficient accumulation to produce toxicosis.

Whether these were secondary effects of bacterial action, the defence against which was broken down by the excess of food, or whether they were purely biochemical in mechanism. The result fulfilled the expectations of the theory; for the patient's indulgence was prevented, the attacks ceased, she returned home; and my latest advice a year ago, was that she remained well.

I have noted several times recrudescence of symptoms in psychasthenia after errors in diet. Either starvation or excessive protein aggravates the symptoms.

Of course they do not create psychasthenia, but they lower what Janet calls the psychological tension which thus permits the mental vagaries so characteristic of this disease. **The dietetic poisons are badly tolerated by such patients, who should abstain from, which not only disturb nutrition, but interfere with neuronal activity.**

Nervous Children

The difficult psychic management of the unstable child may be completely vitiated by want of care in very simple dietetic needs. Starvation, too frequent meals, too heavy a ration, excess of protein, or extractives all subtract energy from the cerebrum, where it is needed for discipline.

Toxines and peripheral irritations are not conducive to mental activity or emotional tranquillity.

Hysteria

Although the disorders we term hysterical are purely psychological in origin, yet the hyper-suggestibility on which they depend varies greatly with physical states. Diet has a marked influence on these. In the psychomotor discipline against hysterizability, disturbances due to faulty diet are a great handicap.

A case of hysterical spasm, where psychomotor discipline was unavailing until a faulty diet was rectified, has been recently reported by me in Surgery Gynecology, and Obstetrics for March, and Washington Medical Annals for January 1912. A case where hysterical absences were much aggravated by lapses from a strict diet was that I reported in International Clinics, Vol. III, 1908.

When the energies are deployed toward metabolic disposition, large quantities of nutriment are unavailable for concentrated mentality. As an exalter of suggestibility, feasting is as vicious as fasting. Of both means, the old religious organizations were well aware empirically in managing the devotees.

Hemicrania and Other Constitutional Headaches

Most of these cases appear to be toxic. It is certain that the vast majority are greatly ameliorated by diet which enforces the principles here described." - Dr. Tom A. Williams, MB, in "The New York Medical Journal", 6 April 1912.

The Function of Glands

"**The function of glands appears to be to sustain life. All the activities of the body naturally lean toward that work.**

With just the slightest degree of cooperation by the individual, life could go on many years longer than it now does.

Believing as scientists do that the glands are storage reservoirs for minerals, and that they contain a good supply at birth, we might suppose then, that those whose diet is deficient in minerals and vitamins for a long period, live only so long as the glands are able to supply the body with the necessary elements.

These people gradually decline in health and many of them pass away years sooner than necessary.

As the glands of some at birth are larger and better supplied with these elements than others, having been born from sturdier parents, these people live to an older age without showing the effects of a poorly balanced diet.

This answers the often asked question of why some live longer than others on apparently the same poor diet.

Of course, more is needed in the diet than just minerals and vitamins.

There are the proteins for growth and repair, the starches, sugars and fats for energy and heat.

In addition, fresh air is needed so the lungs can do their part in purifying the blood, pure water to flush the tissues and kidneys, and plenty of exercise to promote good circulation." - Lillian Taylor, in "Clean Up the Blood Stream and Live", 1944.

In Relation the General Workings of the Emunctories Proper

If there are improper eliminations, improper digestion, causing the secretions to being hindered by the activities to the glandular system.

By the consumption of certain foods, or certain combinations of foods, these enter the jejunum at times without proper coordination of the gastric flows from the liver, the spleen, the pancreas, the gall duct and the gastric flow.

This then affects the Sympathetic Nervous System, and the superficial blood supply thus become involved, and are slowed up, this results in the lessening of the activity of the lymphatic system.

Indigestion, Malnutrition and Disease

"The wonder is not that structural imperfections and functional disharmonies should develop in proportion to our numbers, but rather that so many of us escape harm altogether and enjoy good health. The solution of our problem of life is a fuller knowledge of the use and working of those parts of our bodies most apt to give way under our modern ways of living, the use of such structures as the great bowel. And when we have replaced our ignorance by real knowledge, we shall be in a position not to adapt our bodily structure to our mode of living, but our mode of living or our bodily structures. The great bowel is not a useless or superfluous organ, but one which we in our ignorance are maltreating" – A. Keith, in "The Nature of Man's Imperfections", Lancet, 25 Nov., 1925.

Such an assertion intimates that intestinal indigestion, malnutrition and ill health may be revealed by a better understanding of the functions of the colon from right eating; and they may be corrected by an exact means to determine the absorption of food; for:

> *"Little is known concerning the difficulties of absorption and utilization of food products from the digestive tract, and regarding what particular foods may improve gastro-intestinal function. It is probable that significant degrees of such disturbances may arise in arthritis, and be overcome by well chosen diets." - G. R. Minor, in "General Aspects of the Treatment of Arthritis", New England Journal of Medicine, 22 June 1933.*

Obviously, eating too fast and too much, irregularly, incomplete or disproportioned meals, are not conducive to the maintenance of normal nutrition and health.

But when:

> *"We adapt our mode of living to our bodily structures by the correction of these erroneous ways, a delicately adjusted and complex function of the colon begins to operate, which moulds the intestinal contents entirely into the uniform segments of the normal faeces. In this way the digestive system acts as a perfect nutritive apparatus, because this function serves to determine wrong eating, and perhaps erroneous ways of living. Again, as this function moulds the normal faeces, it also measures the contribution made one meal to the construction of the body, or the normal intestinal rate; and thus these indices denote the complete digestion and absorption of the food". - F. L. Burnett, in "Fecal Units and Intestinal Rate, a Basis for the Study of Health and Intestinal Indigestion", Boston Med. and Surg. Journal, 14-21 April 1921.*

Then, as nutrition is the sum of the processes by which an animal absorbs, utilizes, and takes in food substances, and assimilation is the final and most important phase of the process, the indices of absorption still further serve to determine normal nutrition, and to furnish a clue to the construction and maintenance of cells.

For by the application of these indices to nutrition, erroneous ways of eating not only provoke a previously unrecognized kind of intestinal indigestion and malnutrition, but also give rise to a formerly obscure cause of disease.

This is because they result in a course, incomplete, and disproportioned alimentary mixture, which induces an abnormal action of the colon, by which soft and formless faeces and rapid intestinal rates are produced.

In these circumstances nourishment goes through instead of into the body, and the relatively unknown condition of an exact and improved state of well being from normal or anabolic nutrition cannot be maintained.

In such a disorder there is a failure in the final, and most important phase of nutrition, assimilation, and the weak skin, bone, or some other tissue of a patient breaks down in a recognized metabolic disease.

After some of these diseases, as Indigestion, Ache, Eczema, Psoriasis, or Arthritis have been diagnosed, principles of treatment for the creation and control of this state of health to cure them, have been applied with good results." - Dr Francis Lowell Burnett, MD, Director of Health Class for Skin Diseases at the Massachusetts General, Assistant in Charge of Health Class for Arthritis at the Peter Bent Brigham Hospitals, in "The Intestinal Rate, Normal Nutrition, and Health. New Principles for the Maintenance, Restoration, and Control of Health", American Journal of Digestive Diseases and Nutrition, July 1936.

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Collagen

"Collagen is the most abundant protein in the animal world. It is part of the structural connective tissue in every organ in the body." - Jaqueline B. Weiss, et al., in "Collagen in Health and Disease", 1982.

Diet in Heart Disease and Arteriosclerosis

"The relations between the heart, blood-vessels, and kidneys have become much clearer, and the fundamental importance of food in all its stages has been very positively established by the laboratory. The management of heart disease and hardening of the arteries pertains, in a great measure, to regulation of food. I have a patient in my private hospital (as a result of the abuse of protein food) a young man in whom heart, blood-vessel, and kidney diseases have developed as the direct result of eating enormous quantities of meat. His wife told me that it was not uncommon for him to eat 6 chops at a meal or 2 kilos of beef. A very intense intestinal putrefaction developed, the products of which were absorbed into his blood, poisoning his heart so that it did not beat more than 40 times to the minute, damaging his kidneys and poisoning his nervous system so that he was in a terrible state of nervousness and depression. This is an extreme example of proteid poisoning. **While protein food is harmful in excess, it is also necessary in moderation.** Just as surely as an automobile engine will stop or run badly if the mixture in the carburettor is wrong, so surely will a human being drift into disease and perhaps perish if his food supply is not properly balanced, with regard to his condition and the demands upon him." - Dr Louis Faugeres Bishop, MD, Clinical Professor of Heart and Circulatory Diseases, Fordham University School of Medicine; in "International Record of Medicine and General Practice", Vol.93, 1911.

How Nutrition Affects Brain Function

"The Gastro-Intestinal tract and the gut microbiome clearly connect with the brain there are multiple pathways by which this happens.

> *"Microbiota from forced fed diabetic mice induced social avoidance and changed gene expression resulting in altered myelination in the prefrontal cortex."- in "The Anxiolytic Effect of Bifidobacterium Longum NCC3001 involves Vagal Pathways for Gut-Brain Communication", Neurogastroenterol Motil., Dec 2011.*

I read this, I had a chill go through me. This is a study in rats, where they force-fed diabetic rats glucose, and then they took 3 strains of their microbiome out, and then injected them into another group of rats, that had a microbiome in the gut that was not diverse, it was very narrow, and what they found is: by injecting these 3 strains they actually changed the gene expression in the prefrontal cortex that changed the myelination of of the neurons in the prefrontal cortex.

That means that you could have bugs in your gut that are changing how your brain is functioning". - Dr Robert Hedaya, MD, in "Functional Medicine for Depressive Disorder: Advances in the Treatment Paradigm", 2016.

"**Low-grade inflammation is the hallmark of metabolic disorders. Evidence indicates that these disorders are characterized by alterations in the intestinal microbiota composition and its metabolites, which translocate from the gut across a disrupted intestinal barrier to affect various metabolic organs, such as the liver and adipose tissue, thereby contributing to metabolic inflammation.**

Recently identified mechanisms that showcase the role of the intestinal microbiota and barrier dysfunction in metabolic inflammation.

We propose a concept by which the gut microbiota fuels metabolic inflammation and dysregulation." - Herbert Tilg, Timon E. Adolph, Department of Internal Medicine, Gastroenterology, Hepatology, Metabolism & Endocrinology, Medical University Innsbruck, Austria; et al, in "The intestinal microbiota fuelling metabolic inflammation", Nature Reviews Immunology, 6 August 2019.

Diet in Chronic Nephritis

The processes of catabolism are numerous and complicated. The kidneys are essentially concerned in the many retrograde changes of the economy.

"I speak of the diet first in the treatment of chronic nephritis because it is the most important single factor in the handling of these cases.

Treatment of Acidosis

This condition is relieved and reduced by the use of bicarbonate of soda solution. In all forms of acidosis, alkalies are indicated. They may be administered by mouth or intravenously or by rectum." - Dr Hyman I. Goldstein, MD in "Medical Council", January 1920.

Physiology of Nutrition and Absorption

"In the higher classes, not only is an internal cavity provided for containing its nutritive matter, but that cavity is of sufficient magnitude to admit solid substances. At this point, nutrition ceases to be the mere imbibition of sustenance from the soil or the atmosphere.

Preparatory operations are now necessary to apprehend the food, to divide it, and to fit it, in various modes, for its common receptacle. These operations, together with the changes which the aliment under goes in its receptacle, constitute a process: that process is termed digestion.

Thus digestion is a modification of the function of nutrition, peculiar to animals, and rendered indispensable by the faculty of locomotion.

The circulation distributing the nutritive fluid to every part of the body, and depositing every where the nutritive particles as they are needed, to repair the waste of the system, means must be procured to supply the nutritive fluid with fresh matter.

For this object the digestive organs are provided. Between the digestive organs, and the vessels which carry on the circulation, there must therefore be a communication. That communication is established by a system of vessels termed absorbents. At one extremity the absorbents are in communication with the intestines, the organs which contain the newly formed nutritive matter, which they absorb by innumerable orifices; at the other extremity they are in communication with one of the main trunks of the circulating system, into which they pour the digested aliment received from the organs that prepare it.

In this manner a direct communication is established between the great laboratory, in which the nutritive matter is prepared, and the vessels by which that matter is conveyed to the different parts of the body.

Thus the absorbent system is a mere complication of the animal organization, rendered indispensable by that of the circulation.

But the aliment, after it has undergone all the operations to which it is subjected in the digestive organs, is still not fit for the purpose of nutrition. A process, by which its heterogeneous particles are converted into one common nature, and which is termed assimilation, is performed by any organized body. Respiration, performed in some mode, is indispensable to life, because it is an essential part of the function of nutrition. The functions which are indispensable to animal existence are those of nutrition, circulation, absorption, respiration, reproduction, sensation, and voluntary motion and excretion.

The principal dilutative of the sac is termed the stomach; sometimes there are more dilutations than one; then there are said to be 2 or more stomachs: that part of the tube below the stomach is denominated the intestine; the whole of the tube, from one extremity of the organ to the other, is called the alimentary canal. In general this organ is composed of separate coats, the internal of which is commonly a continuation of the external covering of the body.

Hence the external and internal surface of the animal body is in general composed of the same tissue, and modified in adaptation to its specific function, but both essentially the same.

The groat function performed by the internal surface of the stomach is the secretion of a peculiar fluid, by means of which the chief part of the process of digestion is effected.

This fluid, termed the Gastric Juice, is one of the most singular in the whole animal economy. In its external properties it is without colour, without odour, without taste, yet it is the most powerful solvent known.

It speedily reduces the food which is brought into contact with it, into a pulpy and homogeneous mass, and the hardest textures yield to it; not only the tough fibre of the vegetable substance, not only the muscular and membranous fibre of the animal solid, but even hair, shell, and bone itself. It is a universal solvent.

Thus the same sac which forms the receptacle of the food, furnishes the menstruum by which the solution, the chief part of the digestion of it, is effected.

By the contractile power of the stomach, its contents are propelled into the first intestine, called the duodenum.

There the aliment is mixed with a fluid secreted by the liver, termed the bile; with another fluid secreted by the pancreas, termed the pancreatic juice, and with the secretion of the surface of the intestine itself.

In its progress through the other intestines, mixed in like manner with the secretion of their surface, the aliment becomes as completely digested as is possible, by means of this system of organs.

The mass is now separated into two parts; that which is fit for nourishment is absorbed by a system of vessels termed the lacteals; the rest, the excrementitious portion, is discharged from the body." - Dr Southwood Smith, MD in "Comparative and Human Physiology", The London Magazine, Vol.7, 1827.

Digestion

All digestion is not done in the stomach itself, but assimilated through and by the proper functioning of the secretions.

The Role of Mastication Proper in Health

"**It is best to heed nature's warnings, and to use her organs as the Creator designed. The teeth, tongue, and saliva were not made in vain.** If you are pursuing habits which are contrary to nature's laws, stop right now and turn back. You are following a dangerous path.

Right Use Necessary to Health

It is true we have found an effective means of relieving a sluggish, constipated colon, and washing out a foul stomach, thereby in a measure remedying the effects of your indiscretion, but it is best not to get into that condition which makes the use of these remedies necessary, one of the chief causes of which is bolted, half-digested food.

While other liquids can moisten the food so that it will readily pass down the gullet, no other liquid can take the part of the saliva in that important first step in the digestive process, viz,, turning the starch into glucose. Especially such articles as bread, potatoes, corn and like articles, largely composed of starch, should be slowly and thoroughly masticated and mixed with the saliva before passing down the gullet into the stomach. If you would avoid dyspepsia and its concomitant ills, or be freed from the bodily diseases from which you are now suffering, this rule must be observed." - Jas. W. Wilson, in "The New Hygiene", 1893.

The Origin of the Word "Diet"

The origin of the word "diet", comes via Latin from Greek word "diaita" meaning "a way of life", but the modern concept of the word is far from its ancient root. The word "diaita" was about Physical and Mental Health, how one eats can enhance ones well-being. The word "diaita", encompassed the idea to eat regularly, moderately and simply, with enough daily physical exercise (either work or outdoors, contact with nature), mental rest, relaxation (distraction), along with the all important 8 hours of physical sleep, allowing time for the physical body to repair itself.

Healthy Diet

"The particular components of the Mediterranean diet that have been shown in studies to be particularly beneficial, are foods such as extra virgin olive oil, lots of vegetables and some whole fruit, oily fish, nuts and seeds. What we need to be doing, is really reducing our consumption of ultra processed food. Ultra processed food is essentially any food in a packet that has more than 5 ingredients." – Dr. Aseem Malhotra, MD in "ITV News", 13 Sep. 2018.

Diet in Diabetes

"**Diet remains the chief factor leading to success in the treatment of diabetes.**

Acidosis is a criterion of the severity of the condition, as when the amount of sugar excreted is moderate and acidosis is absent, such cases are described usually as of the "alimentary" type.

In arranging a diabetic diet, great discretion must be used.

The patient must fully comprehend that the islands of Langerhans have been in-some instances damaged severely and practically in all cases their reserve power largely impaired so that it is essential that the surviving islands of Langerhans are never overworked and this is a very important point that the insulin requirements should be as small as possible.

It cannot be too strongly emphasized that insulin should be employed with great care and that the introduction of insulin has not done away with the need for diabetic patients to conform to a diet, in keeping with the type and severity of this particular phase of diabetes. Of course, surgical operations are always contraindicated before the introduction of insulin and it goes without saying that they may be at die present time carried out provided that certain precautions are observed. The great mine of insulin lies in the above fact.

Insulin useful in the treatment of certain forms of diabetes, but diet remains the most important factor in the successful treatment." - in "International Journal of Medicine and Surgery", December 1931.

"Diseases imprint on our organs alterations quite identical to those which certain physical and chemical agents can cause. It is therefore not surprising that there are organic alterations entirely similar to those produced on our tissues by an acid and perhaps even a beginning of cadaveric alteration. This makes it difficult in some cases to distinguish physical or chemical alterations from vital alterations." - Dr Jean Cruveilhier, MD, in "Anatomie Pathologique", Tome 1, 1828.

"In support of these conclusions, may now be adduced the fact of sugar having, in several cases, been discovered not only in other secretions besides the urine, but also in the circulating system, in the intestinal canal, and, in one instance at least, in the stomach of a diabetic subject, who had been fed on a diet exclusively animal. This detection of the sugar, en route, as it were, to the kidneys, was, undoubtedly, an important step in the investigation, obviously leading us to look for the source of the unnatural product, rather in a vice of those processes of the animal economy which are engaged in elaborating, from alimentary materials, the proximate principles of the body, than in any fault of the Emunctories through which it is cast out of the system." - Dr William Macintyre, MD in "Cases of Perforation and Other Lesions of the Stomach, Occurring in Connexion with Diabetes", London Journal of Medicine, April 1850.

Therapeutic Dietary Correction

Whole Grains

"I have not made an effort to determine the number of diseases which are directly de pendent upon diet, but I believe I would not be far out of the way if I should say every disease to which man is heir." - Dr Harvey W. Wiley

There is food for thought for those skeptics who never give a thought to what they eat or why, theirs not to reason why. Theirs but to eat and die; into the Valley of Death ride the unthoughted.

"When sickness does overtake one. the importance of strengthening the vital spark is supreme. In most cases the whole course of digestion is disturbed and foods which in a state of health are palatable and desirable become unpalatable and undesirable." - Dr Wiley

We have a record of 27 different ailments which have promptly responded to the regular use of Whole Grains, proving beyond a question that faulty food was the basic principle behind every one of these 27 ailments.

Let no one jump to the hasty conclusion that this is a denial of the existence and effect of bacterial invasion, for it is not.

But, It is a definite and positive statement that faulty food is the chief and controlling factor in the breaking down of immunity to bacterial attacks, or infection. The normal body is immune to, or able to fully resist, all such attacks, and no body can be normal that is fed upon faulty food.

Why does whole grains correct or tend to correct altered function of the organs of the body, and that is all disease is?

Because whole grains are identical with the raw, ripe grain provided by nature for the sustenance of man, and possesses every one of the elements of which the human blood is composed: and possesses these elements in balanced combination readily assimilated by the blood stream." - in "Physical Training", Vol. 20, 1923.

Therapeutic Indications

"High blood pressure has a profound therapeutic indication, namely, the limitation of the protein content of the food to the actual requirements of the body, from 50 to 90 grams a day, according to the case. It is a strong inducement for ordering outdoor exercise.

Low blood pressure, as an acute condition, calls, according to the nature of the case, for a vigorous attack upon some existing form of toxaemia—intestinal, bacterial, or otherwise; it calls for the conservation of nervous energy, as in conditions of shock; and in an acute case there is a call for attention to posture.

Examination of the urine and blood: The therapeutic indications discovered by the laboratory examinations of the urine, blood, and faeces I place on an equal basis of importance with examinations of the heart and blood-vessels themselves.

In the laboratory we find the evidence of intestinal putrefaction which I believe to be the most usual cause of Arteriosclerosis.

The therapeutic indications are the use of castor oil at regular intervals, the use of the less fermentable carbohydrates, the insistence upon outdoor exercise, and the possible local treatment of the large Intestine by Irrigation, all these things being coupled with the low protein diet.

We also find in many cases of Arteriosclerosis a large increase of red blood cells accompanied at the same time with anaemia, in the sense of low haemoglobin.

This indicates that the body retains an abundance of nourishment which has not been distributed to the tissues, and is a strong indication for urging plain diet and outdoor life, avoiding all kinds of tonic drug treatment.

Treatment must be chiefly directed toward influencing the digestive tract and the composition of the blood." - Dr Louis Faugeres Bishop, MD in "New York Medical Journal", Vol. XCIII, June 1911.

The Importance of Diet in Heart Lesions

"In "The Medical Record", 28 Sep. 1913, Dr. Louis Faugeres Bishop emphasizes the importance of regulating the diet in purely valvular cases; that is to say, not in advanced cases in which the kidneys have become involved.

Many of these patients will, in addition to their chronic heart trouble, suffer from chronic intestinal putrefaction resulting in the chemical poisoning of the heart-muscle, and this will prevent a satisfactory degree of compensation from being developed.

If in such cases the diet is carefully regulated, prompt improvement will, as a rule, occur." - in "The American Journal of Clinical Medicine", Vol.20, 1913.

Principles for the Creation and Control of Health to Cure Disease

"Health has been a vague and variable condition of the human body, but its maintenance and restoration have been more assured of late, from an understanding of the needs of the healthy body for complete food; and thus some of the established deficiency diseases have been relieved, cured and prevented.

Obviously eating too fast and too much, irregularly, disproportioned meals, or the frequent use of laxatives are not conducive to normal nutrition and health; but by regarding the digestive system as a perfect nutritive apparatus in which a function of the colon only operates from right eating to produce normal faeces and normal intestinal rates, these erroneous ways of eating provoke a previously unrecognised kind of intestinal indigestion, malnutrition and disease.

This is because the food consumed does not complete its cycle of digestion and absorption, and nourishment goes through instead of into the body.

Thus, there is a failure in the final and most important phase of the nutritive processes (assimilation) and the exact and improved state of health from anabolic or normal nutrition, cannot be maintained.

Principles for the creation and control of this state of health to cure disease, have been applied in the treatment of some of the Skin Diseases and Arthritis; and patients who understood and carried out the principles, have been cured of these diseases." - Dr Francis Lowell Burnett, MD, Director of Health Class for Skin Diseases, Massachusetts General, Assistant in Charge of Health Class for Arthritis, Peter Bent Brigham Hospitals, in "The Intestinal Rate, Normal Nutrition, and Health. New Principles for the Maintenance, Restoration, and Control of Health", American Journal of Digestive Diseases and Nutrition, Vol. III, Issue 7, July 1936.

A Faulty Diet, Bring Intestinal Stasis and Consequent Toxaemia

"**I should like to state, as a matter of a fairly extensive experience, that I have never come across a solitary case of cancer, in which the patient had not been a victim of chronic constipation**, and, I feel confident that; **cancer is not the only disease upon which an insanitary condition of the colon acts as a potent predisposing cause.**" - Dr. Robert Bell, MD in "Proceedings of The Royal Society of Medicine", 1913.

Corrective Treatment of Commoner Forms of Enterocolitis

"Chronic enterocolitis is an inflammation of the small and large intestines, with or without ulceration, which persists for more than 1 month or 2 after the acute stage has subsided.

The intensity of the process may range from the mildest type of intestinal indigestion up to ulceration or perforation.

Text-books on the subject enumerate many etiological factors; however, most of those described are of little practical value for preventing or treating this condition. The incidence of chronic enterocolitis is widespread, and it is directly or indirectly responsible for many kinds of functional disturbances and organic damage. Since enterocolitis at one time or another attacks the average human being, it is logical to believe that there is a common primary cause.

When we speak of etiology, it is not to define the microorganisms responsible for the enterocolitio pathology, but more properly a consideration of the many factors and agencies that make possible and allow of the bacterial invasion of the intestinal tract to produce the local pathology and the constitutional manifestations which are so often found to be associated with this affection.

Perhaps the most revolutionary conception is that serious diseases or functional disorders may be caused by a deficiency or lack of certain constituents in food.

The inquiries as to why focal infection occurs have developed some very interesting facts related both to diet and health and to diet and disease.

This discussion of enterocolitis would be narrow if it did not include focal infections throughout the extent of the digestive tract. It is a frequent observation that enterocolitis is associated with existing or pre-existing infections of the upper digestive and respiratory tracts.

Therefore, to cover the subject properly it is necessary to include a number of facts that have been established by experimental and clinical observations on the relation between faulty food and digestive tract infections.

The subject matter of this paper is based on the observations of McCarrison, McCollum, McClendon, Shipley, Howe, Grieves, Hess, Mendel and Osborne, Hopkins, and many others on the relation of diet to certain types of deficiency diseases and digestive tract disorders and diseases.

Their observations have shown the necessity for balancing the important ingredients of food essential to the body's well-being, as suitable proteins, carbohydrates, fats, minerals and vitamins.

The studies of Herter, Kendall, Rettger, Cannon, Bass, Kopeloff and Cheney, Eggston and myself, on the relation between diet and the intestinal flora and that existing between a normal intestinal flora and the state of health, add another factor to the causation, the prevention and the treatment of digestive tract disease.

Faulty Food

We no longer eat many of our foods in their natural state.

The preparation of food for preservation, storage and transportation alters its food value in many instances.

Grains have been robbed of a great part of their mineral and vitamin content.

The sterilization or evaporation of milk has decreased its mineral content.

We discard the cartilaginous and tendinous portion of fleshy food and would not think of eating the blood of animals or gnawing on bones.

The peelings of many fruits and tubers are discarded and much of the mineral value of these foods is thus lost.

We insist on pure white sugar, when unrefined or brown sugar would be nearer our needs.

Table salt has been deprived of iodine, calcium and other chemicals which are such an essential part of diet.

These are but few of the examples necessarily enforced by the complexity of our present day civilization. This injury to food does not stop in its preservation, preparation and storage.

Vegetables may be lacking in those necessary proximate principles and vitamins because of being grown upon soil unsuited for their proper nutrition, or if deprived of sunlight. Milk may be lacking in these principles if the cow has been fed upon provender grown upon unsuitable soil.

The same is true of meat derived from animals fed upon faulty provender.

Therefore, there are many agencies that contribute to the production of faulty food, although the physical characteristics of the food may not appear to be altered.

Recently, the commercial interests have aroused a widespread interest in vitamins and have insidiously suggested that a lack of vitamins is the chief cause of deficiency diseases and nutritional disorders.

Investigators have conclusively shown that there are other principles as important as the vitamins and that their absence negatives the value of the vitamins just as much as the absence of the vitamins negatives the food value of the other factors.

Paradoxical as it may sound, it is the very element of the population which could afford a good food balance among which a devitalized diet is observed most frequently.

The poorer classes eating coarser bread and utilizing all the vegetable parings, fats and certain protein substances usually discarded, subsist on a diet much richer in vitamins and minerals.

Faulty Food and Digestive Tract Infection

McClendon, Shipley, Howe and Grieves have recently contributed some very instructive data on the relation existing between diet and dental caries.

They have somewhat upset many accepted theories in reference to dental infection and in the light of their investigations it would appear that dental diseases are not essentially a local condition, but rather a manifestation of constitutional disturbances produced by the prolonged use of faulty food.

Their studies of the nutrition of teeth have shown that they require all the food elements needed by the body and, in addition, their texture is dependent upon necessary chemical elements, as calcium, fluorine and the phosphate ion.

They have shown that there is a relation between diet and, the metabolism of bone and teeth, and that the metabolism of bone and teeth is similar.

To sum up their conclusions, the proper development and the maintenance of the proper nutrition of bones and teeth are dependent upon an adequate provision of calcium, phosphate and vitamins A, B and C.

McCarrison, whose opportunities for the observation of the effect of diet on man and animals have been very unique, and whose observations have extended over a long period of years, has been able to produce definite endocrine disorders by vitamin deficiency in association with faulty food balance. He has shown the close relation ship between a proper diet and the harmonious metabolic state. He has called attention to the necessity of providing food which will maintain and sustain the endocrine balance.

The work of the other investigators mentioned has proved that rickets, scurvy, opthalmia, beri-beri, and other diseases are due to a deficiency of some essential principle of nutrition.

McCarrison has been able to produce gastro-enteric pathology in man and animals by feeding natural foods from which he had extracted one or more of the vitamins or to which he had added an excess of starch, or of fats and starch. **By feeding this faulty food over variable periods of time he has been able to produce diarrhoea, dysentery, dyspepsia, and gastric dilatation, gastric and duodenal ulcer, intussusception, colitis and failure of colonic function.**

He does not believe that these conditions are invariably produced by faulty food or that faulty food is the only cause of them.

He does contend, however, that **faulty food is often at the bottom of their causation** and if natural or well-balanced food were used from birth that their occurrence would be lessened materially.

His conclusions regarding the experiments on monkeys manifesting gastro-intestinal conditions in consequence of the various deficient foods employed, are summed up as follows:

1. The health of the gastro-intestinal tract is dependent on an adequate provision of vitamins. The absence of growth vitamins is capable of producing pathological changes in the tract which frequently assume the clinical form of colitis. This observation is of the highest importance in view of the frequency with which this malady is encountered at the present day.

Deficiency of vitamin C is especially concerned in the production of congestive and hemorrhagic lesions in the tract, and evidence of these may be

found in animals which have not exhibited during life any of the clinical manifestations of scurvy in noteworthy degree.

A state of ill-health of the gastro-intestinal tract may thus be a prescorbutic manifestation of disease due to insufficiency of this vitamin, especially when associated with an excess of starch or fat, or both, in the food.

2. The disorder of the gastro-intestinal tract consequent on vitamin deficiency is enhanced when the food is ill balanced.

3. Pathologic processes resulting in this situation from deficient and ill balanced foods are:

a. Congestive, necrotic and inflammatory changes in the mucous membrane sometimes involving the entire tract.

b. Degenerative changes in the neuromuscular mechanism of the tract, tending to dilatation of the stomach, ballooning of areas of small and large bowels, and probably also to intussusception,

c. Degenerative changes in the secretory elements of the tract—of the gastric glands, the pyloric glands, the glands of Brunner, the glands of Lieberkuhn, and the mucous glands of the colon. These changes are such as must cause grave derangement of digestive and assimilative processes,

d. Toxic absorption from the diseased bowel, as evidenced by changes in the mesenteric glands,

e. Impairment of the protective resources of the gastro-intestinal mucosa against infecting agents, due to hemorrhagic infiltration, to atrophy of the lymphoid cells and to imperfect production of gastro-intestinal juices. This impairment not only results in infections of the mucous membrane itself, but also permits of the passage into the blood-stream of microorganisms from the bowel.

f. It is to be emphasized that the pathologic changes found in the gastro-intestinal tract are more marked in some individuals than in others; and that, while all of them may occur in one and the same subject, it is usual to find considerable variation in the incidence of particular lesions in different individuals.

These observations are significient and when coupled with his observation that in uncivilized races, gastro-enteric conditions are very infrequent, are convincing proof of the relation of faulty food to enterocolitis.

He was led to inquire why certain uncivilized tribes possessed such magnificent physique and preserved for so long the characteristics of youth, were so long-lived and unusually fertile and free from the functional nervous disturbances.

During a period of 9 years when his operating list averaged more than 400 major operations a year, he never saw a case of asthenic dyspepsia, of gastric or duodenal ulcer, of mucous colitis or of digestive tract cancer.

He attributes the infrequency of these conditions to these circumstances:

1. Infants are reared as nature intended them to be reared - at the breast. If this source of nourishment fails they die; and at least they are spared the future gastro-intestinal misery which so often has its origin in the first bottle.

2. The people live on the unsophisticated foods of nature: Milk, eggs, grains, fruits and vegetables.

I do not suppose that 1 in every 1,000 of them has ever seen a tinned salmon, or a chocolate, or patent infant food, nor that as much sugar is imported into their country in a year as is used in a moderate-sized hotel of this city in a single day.

Natural foods in their natural state, that is; milk, eggs, grains, fruits and leafy vegetables, protective foods as McCollum has named them:

> *"For they provide in proper quality and proportion the proximate principles and vitamins necessary for nutritional harmony and the proper vegetable residue for the healthy evacuation of the bowels."*

This information, so briefly reviewed, seems to establish experimentally and clinically that digestive diseases are due primarily, perhaps in almost every instance, to faulty food deficient in proximate principles or containing an excess of certain kinds of proximate principles or a deficiency of vitamins.

This leads us to the next observation that I have promised to outline, based upon observations of the relation between diet and the intestinal flora on one hand, and the intestinal flora and disease on the other hand.

The Protective Action of Certain Forms of Intestinal Bacteria

If the intestinal flora has a definite biological significance in relation to health and if the maintenance of this biological interrelationship depends upon the diet, then the study of these interrelationships must necessarily begin in early childhood, when the diet approximates more nearly the normal than at any other time of life and at which time the metabolic processes are perhaps harmonized best.

If an infant is breast-fed the intestinal flora is found to be dominated by an aciduric organism, B. bifidus. Later when the child is weaned from the breast or is bottle-fed, the percentage of B. bifidus falls and there is a rise in the percentage of B. acidophilus perhaps a mutation form of B. bifidus, which is better suited to meet the conditions than B. bifidus.

It is safe to assume that both organisms are aciduric forms normal to the intestinal tract of the infant and child, since they can be demonstrated with such constancy in the stools of children.

As the diet includes a higher percentage of starches and proteins, the flora becomes more complex, that is, B. coli makes its appearance in large numbers as well as such organisms as B. aerogenes capsulatus, Gram-positive coccal forms and putrefactive types.

The increase of these forms naturally leads to a decrease of the aciduric types. Briefly, this is the transformation occurring ordinarily in the intestinal flora of civilized man as he grows up.

Experiments and clinical observations have led to the following conclusions which are summarized:

1. The character of the intestinal flora as well as its metabolism are influenced directly by diet.
2. Lactose, dextrin, fruit and vegetable residue promote the growth of the aciduric types and if consumed in sufficient quantities will cause the intestinal flora to be dominated by these types.
3. The simplification of the intestinal flora is most success fully accomplished when other foci of infection in the teeth, tonsils, sinuses, respiratory tract, gall-bladder and the upper digestive tract are removed. In fact, there seems to be a co-existence of these infections.
4. While a complex faecal flora may be present in an apparently normal and healthy individual, it does not signify that this apparent state of health is predicated upon the complex nature of this flora, but rather that the health picture is not as sound as it appears and that the well-being of the individual is being menaced constantly by this type of flora.

On the other hand, an aciduric or simple type of faecal flora is found normally only in healthy intestinal tracts at a time when the organism is undergoing an actively constructive metabolic phase.

The researches concerning the intestinal flora are beginning to establish tangibly the value of this unique partnership between the human body and the protective microorganisms of the intestinal tract, and all the factors and influences which aid in maintaining a healthy intestinal flora are factors tending to prevent disease and prolong the health span of man.

The Diagnosis of Entebocolitic Infections

It is believed that prevalent conceptions regarding the relation of focal infection to systemic disease have been too circumscribed; some placing the blame exclusively on dental and tonsillar infection, and others on constipation and auto-intoxication.

The investigations of Eggston and myself, which have been published, have led me to believe that there is a co-existence of focal infection through out the digestive tract, for example, dental or tonsillar infection is associated, in the majority of instances, with a gall-bladder or colonic focus.

The extension of upper digestive tract infection to its lower levels, or the co-existence of focal infection in the upper and lower digestive tract have been inadequately studied.

The removal of dental and tonsillar foci is not productive of results, in many instances, because of the failure to recognize the presence of associated intestinal infections, and the part that these hidden infections play in the production and perpetuation of systemic syndromes.

Moreover, intestinal infection may occur during the course of an acute infectious disease and survive, in an attenuated form, after all manifestations of the acute disease have disappeared.

Focal infection of the lower intestinal tract has been designated by Eggston and myself as "occult foci of infection", and we have devised a technic for obtaining faecal contents from the higher levels of the colon for cytological, toxicological and cultural studies. Normally defecated stools do not represent a true bacteriological picture of intra-colonic conditions because in the lower sigmoid and rectum the faeces lack moisture, the pabulum is exhausted, autotoxins are concentrated and autolytic phenomena present conditions unfavourable to bacterial metabolism.

The colon is filled from the rectum to the caecum by a special irrigation technic, to be described presently, which utilizes the normal peristaltic cycle of the colon, and the specimen obtained for examination by this method represents an admixture of the faecal contents from all the levels of the colonic tract.

A study of the gross appearance, the toxicology, the cytology, the presence or absence of blood or mucus and especially the bacteriology, supply information which, when correlated with the clinical, sigmoidoscope and other laboratory findings, determines the diagnosis of the presence or absence of occult foci.

These foci are not detectable by X-ray examination. With this improved technic for the diagnosis of entero-colitic infection, a new phase of preventative medicine is made possible.

The failure to recognize early the presence of intestinal foci is responsible for an unnecessary number of Cholecystectomies, Cholecystotomies, Appendectomies, Hemorrhoidectomies, and the Surgical Correction for Intestinal Adhesions, Sacculations, etc.

In considering the intestinal flora one must begin this consideration with a knowledge of the dietary constituents of the patients daily fare. Broadly speaking,

proteins encourage putrefactive processes; the carbohydrates, fermentative processes; and the fats while apparently not capable of initiating a definite process, may intensify either a putrefactive, fermentative or pyogenic process.

It is not believed that placing a patient upon the test diets is of any value because the flora is changed by the diet.

We believe in obtaining a record of the quality and quantity of the average dietary of the patient, and in this way, one may appraise the excesses or deficiencies in the diet.

The intestinal flora will, therefore, represent the average flora of the intestinal tract, which is not true when the test diets are used.

I have classified intestinal florae in reference to the predominating types of bacteria present as follows:

1. The acidophile flora dominated by B. bifidus and B. acidophilus, which is found in healthy breast-fed infants.
2. The aciduric flora dominated by B. acidophilus and non toxic strains of B. coli, which is found in healthy artificially fed infants, young adults and occasionally in older people whose diet has encouraged the growth of the protective types.
3. The fermentative flora dominated by B. coli, B. aerogenes capsulatus, B. lactis aerogenes and some forms of streptococci and especially some members of the mucosus capsulatus group, which are excessively carbohydrolytic.
4. Putrefactive flora dominated by B. coli, B. puirificans, B. aerogenes capsulatus and some forms of streptococci.
5. Pyogenic flora which is subdivided into:
   a) Simple pyogenic flora dominated by the pyogenic types;
   b) Pyo-fermentative dominated by the pyogenic and fermentative types;
   c) Pyo-putrefactive which is dominated by the pyogenic and putrefactive types.

The acidophile, and aciduric florae are normal to healthy intestinal tracts and are protective. The fermentative and putrefactive floras metabolize chiefly the digestive residue and the intestinal secretions. The constitutional reaction to their activity is dependent upon the rate of absorption of their toxins and the ability or inability of the protective mechanisms to fix or bind or cleave their toxic products. Putrefactive states, are believed to pave the way for actual tissue invasion by pyogenic organisms which establish foci in Peyer's patches, mesenteric lymphatics, the intestinal glands and the muscularis.

Autopsy studies upon cases showing characteristic findings of intestinal infection showed the pathological changes to be a hyperplasia of the intestinal lymph chains, far in excess of the hyperplasia found in the upper digestive tract lymphatics.

The intestinal mucosa is diffusely infiltrated with lymphocytes, eosinophils and plasma cells with areas of polymorphonuclear infiltration with abscess

formation. Cystic glands were also noted.

In the more chronic cases, in addition to these findings, the submucosa was fibrous, the lymph follicles hyperplastic with a diffuse infiltration of mononuclear cells.

The muscularis exhibited fibrous change with a thinning of the muscle, indirectly responsible for stasis, dilatation and sacculae.

The drainage of the infected intestinal area to the liver and spleen produced a fibrosis of these structures.

The presence of mucus either free or admixed with the faeces, in which numerous bacteria, pus-cells and the goblet-type of epithelium are present, is indicative of an inflammatory involvement of the intestinal mucosa.

The epithelium may be bile-stained, suggestive of biliary tract infection.

Pus-cells may be imbedded in mucus and are more numerous in drained than in undrained specimens of faeces for apparently they undergo rapid autolysis.

Culturing the faecal contents obtained by this technic upon a double-strength-meat-infusion-carbohydrate broth and incubating it for 24 hours, and if streptococci are found on the stained films, the fluid is subcultured upon blood agar plates, has demonstrated, in many instances, that the cultures were predominantly streptococcic.

It is believed that the infections of the higher colonic tract levels are often predominantly streptococcic and that it is not possible to demonstrate the predominance of this streptococcic flora when cultures are made from a normally defecated stool because of unfavourable conditions just previously mentioned.

For this reason, there is a predominance of the more native and facultative types in the ordinary culture study of the stool rather than a predominance of the distinctly foreign types.

It is further believed that the streptococcic infection is not so much one of the faecal contents, but rather an indication of actual infection of the intestinal tissues themselves.

My reasons for this belief are based upon autopsy observations of Eggston and myself, which have supported the contentions of many investigators, notably, Draper, Satterlee, and Cotton, Since these foci are not satisfactorily demonstrated by X-ray methods of examination, the laboratory findings are highly suggestive and when correlated with a general clinical study, are a most important laboratory contribution.

This difference of cultural phenomena obtained from a drained stool specimen and a normally defecated specimen offers in part an explanation either for the success or failure of autogenous vaccine therapy. By correlating these studies we are in a position to determine to some extent the nature of the intestinal processes.

In many instances, I believe it possible to prognosticate the development of pathological end-results by an examination of the intestinal flora with as much accuracy as we prognosticate the occurrence of rheumatism or heart disease, or what not, from infected teeth or tonsils.

Correlating these facts, it appears that digestive tract pathology is due, in

many instances, to a deficiency of minerals and vitamins, especially vitamin C, which is further intensified by an improper balance of food, especially an excess of starches and sugars and fats.

A study of the infection history of the majority of my cases has suggested that the focal infections resulting from the prolonged use of faulty food and a poorly balanced diet are first obviously manifest as focal infection occurring in dental tissues, tonsils, sinuses and respiratory tract.

In studying manifest gall-bladder and intestinal infection, I have been impressed with the history of the number of acute recurring infections involving chiefly the upper digestive and respiratory tracts, or by the presence of chronic focal infection of these tracts, which apparently preceded the infection of the lower intestinal canal. At least, focal infections in these structures occur apparently before there has been any manifest involvement of the intestinal tract; this may be explained by the survival of the protective forms of intestinal bacteria in these instances.

From these observations, the problem of the treatment of intestinal infections involves not only the problem of the local intestinal pathology, but also the pathology throughout the extent of the digestive tract, and I have formulated 5 Principles which may be applied successfully in the treatment of these lower intestinal tract infections:

1. A diet rich in proximate food principles, and especially in vitamin C and necessary minerals, with a restriction of the readily digestive forms of starches and sugars and the quantity of fat. The diet may be fortified with the less readily digestible forms of sugars, as lactose and dextrine, which encourage the proliferation of the protective intestinal types.
2. The removal or correction of focal infections in dental tissues, the tonsils, sinuses, respiratory tract, gall-bladder and small intestine.
3. Acidophilization of the intestinal tract by the oral administration of milk cultures, fortified in some instances by the instillation of this organism directly into the colonic tract.
4. The Non-Surgical Mechanical Drainage of the Colon.
5. Autogenous vaccines in selected cases.

It is also needless to state to you the orthodox measures employed in the correction or removal of focal infection about the teeth, tonsils, sinuses and respiratory tract. Very few of us, are not acquainted with the work of Lyon, Smithies, Whipple, and others in respect to the diagnosis and correction of gall-tract and small intestinal tract infection. **The Non-surgical Mechanical Drainage of the Colon is a new technic for accomplishing what has heretofore been known as a High Intestinal Irrigation.** The technic takes into account the peristaltic cycle of the colon which enables one to fill the colon through out its extent with the irrigating fluid." - Dr N. Philip Norman, MD in "International Clinics", 1923.

Inflammation, Vitamins and Monocytes

"**The number one front-line cells in your immune system, are the Monocytes (monocytes are a type of leukocyte, or white blood cell), when you get inflammation, the first cells of the immune system that are up here are the monocytes.**

Why that happens:

1. **Wherever you have inflammation, by definition you have an acute consumption of vitamin C**, because inflammation is oxidation, oxidation consumes antioxidants, so where you have oxidation occurring, you have an increase in rapid consumption of vitamin C.
2. **The Monocyte has 80,000%, (80 fold more) vitamin C concentrated inside it, than the plasma. It's just a literal ripe time-bomb filled with vitamin C.** When you have inflammation and you acutely deplete your vitamin C and the first cells that come to that side of inflammation just happened to be the cells of the body that have the highest concentration of vitamin C.

Practical Considerations

When dealing with vitamin C, remember that:

1. **It enhances the immune function, in at least 20 different ways** (Levy 2002, page 180-3)
2. **It has its own direct anti pathogen properties** (iron: Fenton reaction); and so many infections also have toxicity, and that's what further makes vitamin C such an ideal agent, is it has mechanisms for killing a pathogen, and it also has mechanisms for mopping up and neutralizing the pro-oxidant debris that results from metabolic waste from pathogens sometimes from cancer cells pathogens. Cancer cells accumulate iron, they thrive on iron. Elemental iron Fe2+, Fe3+ is highly toxic and when you have a pathogen or a cancer cell ruptured release, you need to be prepared to support your patient or they could get worse. **If you kill all their pathogens all at once they could very well die, from the toxicity of the kill off**, if you don't build up their nutrition first.
3. **Vitamin C neutralizes specific endotoxins, exotoxins, and the non-specific pro-oxidant effects associated with any infection.**
4. **All Infections Consume Vitamin C**, we know vitamin C levels drop as you get sicker.

Oxidative Stress

When free radicals, toxins or pro-oxidant and they present in the human body, in a mount in excess of the body's ability to neutralize it, then you have a state of increased oxidative stress.

This is how vitamin C neutralizes all toxins regardless of the structure of the toxin. All toxins poison in the same way.

You have different syndromes with different toxins because their chemical structure gets them in different tissues at different concentrations and they affect different areas, but at the molecular level they all do the same thing.

What do all toxins and infections have in common?

All infections and all toxins cause cell, tissue damage, and produce symptoms by increasing oxidative stress. No exceptions.

The Nutrient & Toxin Relationship

The defining property of a nutrient is its ability to metabolize into, and eventually break down, into one or more substances that have the ability to donate electrons (reduction). That's all the good nutrient is, and that's called it antioxidant. Antioxidant equal the final common effect of a nutrient.

Antioxidant = Nutrient
Nutrient = Antioxidant

Even thought there is a tremendous variety of molecular structure among tall of the known toxins, they all share the property of taking, or causing to take, electrons from other molecules, oxidizing them and causing a state of increased oxidative stress.

If a molecule does not cause the loss of another, or more electrons from another molecule it is not toxic, and it cannot be toxic.

Toxicity and any symptoms of toxicity cannot exist unless electrons are being taken from other molecules (oxidation).

The defining property of a toxin; directly or indirectly, is its ability to deplete electrons.

Pro-oxidant is = a Toxin
Toxin is = a Pro-oxidant

All toxins share the ability of the take or cause to take electrons from tissue so I put together what I call at least my:

The Basic Laws of Redox Biology
Redox (reduction–oxidation reaction)

1. Electrons are the fuel of life. The “combustion” of this fuel is nothing more than the flow (exchange) of electrons between and among biomolecules.

2. (Bearing in mind that they're the fuel of physical life) All increased oxidative stress causes electron depletion and inhibits optimal electron flow.

Which is the final common denominator in all disease inside the cell spaces cause electron depletion and inhibit optimal electron flow (this is why some of these pulsed electromagnetic therapies are getting such good results, is because when you put a magnetic field into the body with motion at a 90 degree angle you produce a low-grade current electron flow.

3. All toxic effects (so all symptoms to all diseases) are caused by increase oxidative stress.

4. Increased oxidative stress is all disease.

Antioxidant molecules promote electron exchange and flow, while a toxin molecules block electron exchange and flow.

Prominent Promoters of Chronic Degenerative Diseases

1. Infections (Endotoxins, exotoxins, aerobic and anaerobic metabolic by-products, dental): documented to strongly promote oxidative stress and lessen antioxidant capacity.

2. Other promoters of chronic degenerative disease other toxins: Known exogenous toxic exposures (heavy metals, pesticides, etc...).

3. Dietary Toxin exposures (constipated gut, Clostridium); inadequate, poor nutrition and, or poor digestion: poor digestion is worse than poor nutrition in terms of impact on the antioxidant capacity of the body.

Dietary Toxic Exposures

The most important part of your nutrition, comes in how well you digest your food.

If you have a bowel movement, less than 1 time a day, you have some serious toxicity issues. If you go to the bathroom and nobody else can go to the bathroom after you are there for a half an hour, you have got some serious toxicity issues. If food doesn't get out of your system in 18 hours or less, it stops the digesting and starts to rot, and putrefying, in the rotting and putrefaction causes a proliferation of the same type of anaerobic pathogens that are present in a horrible root canal teeth.

So you sort of have an acquired root canal of a chronically constipated gut.

Bottom line is that obviously you want to eat Pure Food, Organic Food, Toxin Free Food non Genetically Modified Organism (GMO). The worst food combinations you could put together that you digest perfectly, is going to cause you less toxicity than perfect food digested poorly. So do both: select good foods, and digest them correctly. And it has to do with food combining; Dr. Ivan Pavlov, the Russian Physiologist, won the Nobel Prize in Physiology or Medicine 1904 “in recognition of his work on the physiology of digestion, through which knowledge on vital aspects of the subject has been transformed and enlarged.”

It was at the Institute of Experimental Medicine, that Dr Pavlov carried out his

classical experiments on the digestive glands "The Work of the Digestive Glands", 1902. That is how he eventually won the Nobel prize, Dr Pavlov investigated the gastric function of dogs.

He did physiology experiments on dogs and he took grotesquely enough what's called open stomach preps on dogs and **he placed pure starch in the stomach, that took 60 to 90 minutes to evacuate.**

Then he placed in ground-up meat chips that took 3 hours as a single meal to digested.

Then he placed the starch and the meat together, it sat in the stomach before it got out 9 hours.

That is the importance of food combining.

People have dietary habits based on what they want to eat, what they want, when the heck they want to eat it, and with whatever they want to eat it with.

But realize you are making it impossible to digest correctly, and your vastly increasing the enormous amount of chronic toxicity, that a constipated purifying gut has to offer you." - Dr Thomas E. Levy, MD in "Vitamin C, The Benefits, How to Administer", Conference 2017.

Gut Toxicity

"I want to first start out and say that you get the regular vitamin C available usually a vitamin C powder ascorbic acid sodium ascorbate, and if you have an acute infection or even a chronic medical condition and you're persistent with your dosing you're going to almost always resolve the infection and almost always get symptom relief to some degree of whatever disease you're dealing.

With that said if you have an infection if you have a chronic condition and you're not getting the effect that you want and you feel that you've pushed the dose as high as you want to one particular sort, remember that the real way to do the optimal amount that you can with vitamin C, is with the multi C protocol the **Oral liposome encapsulated vitamin C** gets it inside the cell, the sodium ascorbate or ascorbic acid powder taken as multiple gram doses several times a day to the point of bowel tolerance, most people is going to be 12 or 15 grams other people that are sicker it's going to be 30, 40 or 50 grams.

But the point being is what did I tell you was a huge source of toxicity of so many people, the gut, so you have a mechanism here if you did it once a week, once every two weeks, it cleans out the gut toxins that are being formed in situ or neutralized, and what it doesn't neutralize it flushes out, so you really get a good reset on this.

If you're figuring out dose you give the rate depends on what you're treating infection toxin." - Dr Thomas E. Levy, MD in "Vitamin C, The Benefits, How to Administer", Conference 2017.

Bacteria that Live on Pure Electric Energy

"We know that life, when you boil it right down, is a flow of electrons:

"You eat sugars that have excess electrons, and you breathe in oxygen that willingly takes them."

Our cells break down the sugars, and the electrons flow through them in a complex set of chemical reactions until they are passed on to electron-hungry oxygen.

The University of Minnesota, published experiments showing that they could grow a type of bacteria that harvested electrons from an iron electrode.

The most convincing example we have so far of electricity eaters grown on a supply of electrons with no added food.

"An electric bacterium grown between two electrodes could maintain itself virtually forever. If nothing is going to eat it or destroy it then, theoretically, we should be able to maintain that organism indefinitely." - in "New Scientist", Issue 2978 , 19 July 2014

Bacteria In Your Gut Produce Electricity

Hundreds of species of microbes that cause disease or interact with us have the ability to produce electric currents.

"The fact that so many bugs that interact with humans, either as pathogens or in probiotics or in our microbiota or involved in fermentation of human products, are electrogenic, that had been missed before." - Prof. Dan Portnoy, University of California at Berkeley, 2018.

"Extracellular Electron Transfer (EET) describes microbial bioelectrochemical processes in which electrons are transferred from the cytosol to the exterior of the cell.

Mineral-respiring bacteria use elaborate haem-based electron transfer mechanisms.

Here we show that the food-borne pathogen Listeria monocytogenes uses a distinctive flavin-based EET mechanism to deliver electrons to iron or an electrode. By performing a forward genetic screen to identify L. monocytogenes mutants with diminished extracellular ferric iron reductase activity, we identified an eight-gene locus that is responsible for EET.

This locus encodes a specialized NADH (nicotinamide adenine dinucleotide (NAD) + hydrogen (H) dehydrogenase that segregates EET from aerobic respiration by channelling electrons to a discrete membrane-localized quinone pool. Other proteins facilitate the assembly of an abundant extracellular

flavoprotein that, in conjunction with free-molecule flavin shuttles, mediates electron transfer to extracellular acceptors.

This system thus establishes a simple electron conduit that is compatible with the single-membrane structure of the Gram-positive cell.

Activation of EET supports growth on non-fermentable carbon sources, and an EET mutant exhibited a competitive defect within the mouse gastrointestinal tract.

These findings suggest a greater prevalence of EET-based growth capabilities and establish a previously under-appreciated relevance for electrogenic bacteria across diverse environments, including host-associated microbial communities and infectious disease." - Samuel H. Light in "Nature", Vol. 562, 2018.

On the Value of a Rice Diet in Certain Acute Diseases of the Skin

"T**rue science should look deeper than local causes in a large share of cases of many kinds of disease, and the study of metabolism is throwing great light on the true pathogeny of many affections, including some of those of the skin.**

As the study of metabolic disturbances progresses, illumined by careful volumetric analyses of the urine that true indicator of the state of the arterial blood, it will be more and more apparent and realized that successful practice will depend upon the careful recognition and treatment of disordered systemic conditions, with due regard to local causation.

But all recognize that metabolism is influenced, or determined for good or bad, to a great degree by the proper, or improper action of the various organs and Emunctories of the body, and universal experience shows that these are again influenced continually by the character of the food and drink taken.

The effect of diet in diseases of the skin

No one, who has carefully observed and studied patients in private practice for many years can fail to be struck with the ill results of indiscretion in eating and drinking in a number of affections of the skin, such as: Urticaria, Acne, Eczema, Psoriasis, etc.

And if dietary effects can be observed in these diseases then the same must be of greater or less importance in connexion with very many others, for metabolic errors certainly influence nutrition and repair.

The harmful influence of alcohol in many diseases of the skin is most marked, and the injurious effects of excessive meat eating in psoriasis has been mentioned by many observers; while the beneficial influence of an absolutely vegetarian diet in the latter disease is most marked and interesting, as I have witnessed in dozens of cases.

In certain more acute and inflammatory conditions of the skin the effects of erroneous diet are often very striking, while, conversely, the results obtained from a proper and often very restricted diet are sometimes very remarkable.

All are familiar with the various forms of urticaria and erythema from quite a variety of articles of diet, of acne after particular and great indulgence in sweets, chocolate, milk, etc., fresh attacks of acute eczema after over indulgence at the table, outbursts of erythema multiforme following great indiscretions in eating and drinking, etc.

In a large share of certain diseases of the skin the urinary secretion is found to be imperfect or deficient, and proteid metabolism seems to be at fault in many of them.

The idea occurred, therefore, of relieving the liver and kidneys, as far as possible, from nitrogenous elimination by the withholding of exogenous proteids.

Water alone was freely supplied for the necessities of the system." - Dr L. Duncan Bulkley, AM, MD in "The British Medical Journal", 24 September 1910.

The Best Rule in the World

"**One should be comfortable in mind and body from the previous mealtime or miss the next meal.**

Some of the effects of emotion on the digestive tract may come indirectly through those nervous stimuli which cause an outpouring of secretion from the thyroid and suprarenal glands.

As is well known, hyperthyroidism often produces diarrhoea." - Dr George S. Weger, MD in "Genesis and Control of Disease", 1931.

"Good digestion wait on appetite and health on both." - Macbeth

"Animals feed, man eats, the man of intellect alone knows how to eat. Tell me what you eat, and I will tell you what you are. The destiny of nations depends upon the manner in which they feed themselves." - Brillat-Savarin in "Physiologie du Gout".

"Whenever there is retention of bodily waste, whenever the elimination of waste is out of normal proportion to the intake, great varieties of troubles affecting the heart and arteries, directly or indirectly, arise.

First to be considered is constipation, so closely associated with poisons in the blood.

Constipation is induced by sedentary habits, while daily exercise favours the emptying of the bowels. Irregularity in going to the closet induces retention, while the establishment of regularity tends to overcome it. The diet should be mixed with a preponderance of laxative foods.The skin, the kidneys and the lungs, also outlets of the body waste, should be given favourable conditions to enable them to perform adequately their functions." - Dr James Henry Honan, MD, in "Heart Disease Its Care, Cure and Prevention", 1922.

Diet in Health and Disease

"**Nutrition: means nourishment of the body; the preparation, assimilation, dissimilation and destruction of substances which take place in processes of repair and growth.**

Food: is the substance that is taken into the body to supply nourishment or to replace tissue-waste. It is the fuel, the source of energy, of the human machine as well as the very material out of which the body is constructed.

For this reason diet must be considered seriously during the period of growth, the period of labour and the period of decline.

Food ingested differs much in composition from the food that can be utilized in cell growth and in replacing the tissue-waste.

Ingested carbohydrates, fats, proteids, etc., are subjected to two distinct processes; preparation for assimilation and for its utilization.

The function of digestion is so to alter the food that it may be absorbed by the blood, and to prepare it for assimilation and utilization by the various tissues.

These 2 processes take place in different portions of the body; the preparation, in the alimentary tract, blood and lymph; the utilization, in various living cells.

To properly understand digestion and assimilation, it is necessary to know something of absorption. This occurs either by the material absorbed entering directly into the blood and passing thence to the liver, or by its entering the lacteals and passing thence through the thoracic duct to enter the blood-current of the left jugular and subclavian veins.

For complete digestion it will be seen that there must be perfect function of each organ of digestion and perfect correlation of all the organs of digestion.

Any physiological or pathological deviation from the normal function of any part of this complex system will be manifested by imperfect assimilation.

Each portion of the digestive tract has a definite function and can perform this function within certain limits. The organs of elimination also have a definite capacity for work in the normal individual.

It is because of this limitation that the quantity, quality and the type of food is of so great importance. Add to this a physiological or pathological perversion of function of the organs of digestion or elimination and the functional capacity becomes at once diminished.

In the maintenance of perfect health of the individual it has been proven that the different kinds of food, proteids, fats, carbohydrates, and the mineral salts, must be present in their proper proportion.

For the maintenance of the normal weight of the individual the amount of food ingested must be sufficient to replace tissue-waste. Any amount below this maintenance diet will be manifested by loss in weight.

The amount ingested in excess of the demand will be stored in the individual.

There are definite limitations to the amount that may be stored in the individual.

The amount of food which may be handled by the body varies necessarily

under special conditions; the adult requires more food than does the child; a man at work, more than one at rest; and emaciated individual less than when he was in a more robust condition; the individual living in the south requires less and a different kind of food from the individual living in the north; an invalid a different quantity and quality of food than when he was healthy, the type and the amount depending upon the nature of the illness and the degree of pathological alteration.

Disease may be caused by taking too little or too much food, by a diet that does not contain the combination of food elements in correct proportions, and by the entrance into the body of many poisons or disease germs with the food and drink.

The diseases due to the taking of insufficient food are starvation, malnutrition, marasmus and some form of anemia. The disturbances due to overeating or the taking of improper food is manifested in various ways.

Food, by producing irritation in the alimentary tract, may be the cause of acute indigestion, diarrhoea, and the like. Excessive amounts of food assimilated may be deposited as fat and cause obesity, or, by overworking the organs of excretion, produce degenerations or sclerosis.

The kidneys, liver, and the heart are the organs most likely to suffer, but the nervous system may also be affected.

In epileptics attacks may be brought on by overfeeding. Gout, lithemia, and the like are among the diseases caused by a too generous diet.

Overeating is probably as prolific a source of disease as overdrinking.

Chronic excessive intestinal putrefaction is quite frequently caused by the entrance with the food of putrefactive bacteria, by the ingestion of improperly cooked food, by improper mastication and the consumption of excessive quantities of food, particularly meat.

The use of an excessive quantity of meat frequently goes hand-in-hand with imperfect mastication.

The result is that many masses of muscle fiber find their way through the small intestine into the lower ileum and large intestine where they are attacked by putrefactive bacteria.

The toxines produced by intestinal putrefaction which are able to pass the lines of defence of the body cause systemic manifestations of varying types.

Tumours are greatly influenced by diet.

The Universal Disease of Today is Constipation

This condition has been brought about by our sedentary life, the strenuousness of modern daily life, and by the substitution of a cellulose-free diet for the diet of our grandparents.

The outer layers of the wheat kernel, found in the course flours, the coarsely rolled oats, the coarse cornmeal, the fruit dried with the skins on, all supplied bulky cellulose.

The pan of apples which was brought from the cellar evenings, the nuts and popcorn, too, that were always in store for an evenings refreshments, were

abundant sources of cellulose. In their place today we find chocolates or food which is completely digestible, leaving no residue and supplying an excess of sugar which must be eliminated. Because we are amply nourished on a diet of meat and sweets, both concentrated and of high caloric value, we thought lessly leave out another essential, the bulky, fibrous, and watery vegetables and fruits.

To make room for these our grandparents reduced the amount of meat and sweets.

Vegetables and fruits not only supply bulk in the digestive tract, but they stimulate peristalsis, acting as a gentle irritant to the lining membrane of the digestive tract. In addition they supply the salts necessary for the organs and tissues in order that they may function properly. Sodium chlorid is necessary for the production of hydrochloric acid in the gastric juice.

Without calcium our bones would become too soft our heart beat would become too slow. The most common foods in our diet, white bread, meat and potatoes, are deficient in calcium. **Without iron our blood would be deficient in haemoglobin.** The food supplying the most iron in an available form is not red meat, but spinach, a green vegetable.

Senility is a relative term

A person may be old and not senile, or, he may be middle-aged and senile.

The presence of the senile process is an indication for certain lines of management and treatment, regardless of the age. The diet must be regulated so as to keep up the nutrition and the proper muscular strength.

Fermentative and putrefactive changes in the intestinal tract must be prevented, and irritants, that circulate in the blood and cause a rise in blood pressure, endarteritis, and irritation of the kidneys, must be eliminated.

When patients are advised to restrict their diet in certain directions to keep arteriosclerosis under control, they are apt to go to extremes. In consequence they suffer from inanition and lack of certain necessary elements in their food.

The evils of dietetic abuse are particularly serious in patients with high blood pressure and neurasthenia. The diet should be regulated, modified and changed to suit the individual patient and existing conditions at different periods.

The diet must be rigidly outlined for patients with premonitary symptoms of cardiovascular renal disease.

Meats should be restricted to once a day; vegetables selected that do not cause flatulence; such milk and cream as he is able to digest without gastro-intestinal disturbance; and such fruit as agree with him best.

These patients while under rigid diet must be carefully watched to note that their weight is not reduced when reduction is not desired, that more indigestion is not caused, and that the patient's strength is normal.

In organic disease of the heart the meals must be simple and small, more should never be given than the patient can easily digest. The diet should contain plenty of fruit in order to help in combating constipation.

Salt should be restricted especially when edema exists.

Dietetic treatment of circulatory disorders is essentially one form of protective therapy.

The essential features of the Karrell treatment is the exclusive use of milk in relatively small quantities at definitely stated intervals.

Science achieved the most admirable triumph when it recognized the significance of the relation of the sodium chlorid to the circulation and the development of edema.

It is to Widal that this conception is chiefly due. A salt-free or salt-poor diet should never be kept up for a long time, or it will do more harm than good.

As far as possible the individual tolerance should be determined, and the patient kept within it.

When the patients have a high tolerance for sodium chlorid, there is no good in restricting the salt intake to very small amounts. The proper regulation of the amount or protein in the food is almost as important in the treatment of nephritis as is the regulation of the carbohydrates in diabetes.

The fundamental principle of the treatment of this disease is to spare the kidneys from unnecessary work. In both diabetes and nephritis it is not only necessary to reduce the carbohydrates or protein, as the case might be, but it is of equal importance to make sure that the patient is getting a diet of sufficient nutritive value to meet the requirements of the system for heat and energy and to offset tissue-waste. The loss from limitation of the protein food must be made up by a corresponding increase of the fats and carbohydrates. Diabetes tolerates neither long-continued reduction cures, nor, on the other hand, sudden loss of weight.

In tuberculosis the question of diet is of great importance.

Healing of a tuberculous process is dependent to a large extent upon the state of nutrition.

The appetite is generally poor and capricious so that in most cases more food can be digested than the appetite demands.

Nutrition should be raised to a point that may be considered good and satisfactory but feeding should not be carried so far that the patient becomes actually obese. Feeding is often forced to the extent that the natural result follows that many cases of tuberculosis are converted into obese individuals whose functional powers are much reduced.

These patients do as well or even better when a study and quantitative regulation provides a well-balanced diet, with an abundant but not excessive amount of nutriment.

Gout and rheumatism are not well understood, although it is known to be associated with a faulty metabolism. In both diseases the cutting down of the protein of the diet seems advantageous, and in gout the careful regulation of these articles of food that contain purine bodies, which is an essential feature of the treatment, can best be secured by the quantitative regulation of thediet.

The question of diet regulation in gastric and duodenal ulcer, skin diseases and

the infectious fevers is well recognized. In liver disturbances, diarrhoea, gastroenteritis and appendicitis the place of the diet list in treatment is quite evident. In order to carry out these measures we must know with some accuracy the composition of food, we must understand a few of the fundamental principles of dietetics, and we must know how to construct a diet list.

We must also know what the indications are. Every patient should be given a typewritten list stating the exact amount of water he should take; the amount, time and kind of exercise he should take; the time to arise and the time to retire; the time for work and the time for complete relaxation or recreation; the order and frequency of his meals; the amount and kind of food he should take and what food to avoid; the use of liquids; the relation of rest and exercise to the taking of food; the inadvisability of eating between meals, except in cases in which it is indicated; the inadvisability of the ingestion of food during a state of high nervous tension; and the advisability of eating slowly and of masticating thoroughly.

The patient must be impressed with the great value of having a definite regulation of all habits: eating, sleeping, exercising, bathing and recreation, as a favourable factor in the return to normal health.

Where the patient has a written list of instructions for daily reference there can be no excuse for his not carrying out the instructions in detail.

A knowledge of the bulk of the food and the amount of residue is important.

Bland food without much cellulose is needed in diarrhoea and in lesions of the gastro-intestinal tract, while in constipation (atonic) and intestinal stasis, residue is indicated.

In obesity, food with large bulk and low caloric value is indicated.

The arrangement of the list should always be compatible with the occupation of the individual. **Many ward patients with digestive derangements show a tendency towards relapse when they return to their homes and, for one reason or another, return to their old habits of eating.**

Diet should be effective during the stay in the hospital but, to be thoroughly effective and lasting, corrections of the home conditions must be made to prevent the patient returning to the habits which caused his original trouble.

In conclusion

The clinical results of special diets may be summed up by saying that in appropriate cases better results are obtained by special diets, if properly applied, than by any other mode of treatment.

In all cases, a properly adjusted diet not only aids toward a more complete recovery but it brings that result about more quickly." - Dr Charles Clyde Sutter, MD in "New York State Journal of Medicine", Vol.14, 1914.

"Individual beauty is a matter of both design of the face and regularity and perfection of the teeth. Nature always builds harmoniously if conditions are sufficiently favourable, regardless of race, colour or location." - Dr Weston A. Price, DDS

Importance of the Teeth

"It is very curious that whilst a Physician would as soon forget his dinner as neglect to examine most carefully a patient's tongue, the teeth are not even glanced at!

Why does he not bestow at least an equal amount of attention on the teeth?

These latter tell us a great deal more than the swiftly changing tongue.

That fickle organ speaks chiefly of the present.

The teeth are land-marks of the past.

Their number, their attitude, their size, their shape, their substance, their colour and their cleanliness are of infinite importance to their owner.

The condition of the gums is eloquent as to past diseases, present health and future possibilities.

To speak of only a very few of these: Scurvy, Salivation, Saturnism, Hereditary Syphilis, Gout and all the vast family that are associated with Anaemia.

Every patient should be taught that perfect health is impossible without perfect mastication, and that perfect mastication is impossible without a good grinding-mill.

Two molars in good order should be able to come into complete contact with two other molars.

There is no proper trituration of vegetable food, unless this state of things be present. In other words, it takes at least 4 molars to make a mill.

Importance of Mastication

By far the most important element in the management of adult Colitis is involved in the conscientious care and the proper employment of the teeth.

People are not educated as they should be, in common cleanliness as to the teeth. They are not only not taught in early life to use the teeth vigorously, but everything is done to make their employment unnecessary.

It has indeed been shown by one of the most sagacious and philosophic of modern physicians, that in ordinary life, the jaws themselves are not employed properly in chewing the food; that the tendency of civilisation, in providing implements for the subdivision of food and in supplying children with food which is practically ready-chewed for them, is leading slowly to degeneration of the jaw and disappearance of the teeth.

Hence a long train of evils, including even nasal obstruction, by the growth of a low type of cellular tissue in the upper pharynx, and the consequent defective development of the lungs." - Dr Edward Thomas Blake, MD in "The Intestinal Catarrhs, Being a Clinical Study of Colitis, Appendicitis and Their Allies: With a Special New Section on Sprue", 1905.

Poor Teeth the Cause of Many Ills

"**It appears not to be generally understood, even among cultivated people, although the fact has been dwelt upon with emphasis by the best medical authorities, that the presence of carious, crowded, or asymmetrical teeth in the human mouth is the progenitor of a long train of nervous diseases, comprising not only facial neuralgia and its concomitant troubles, but diseases of the ear, inflammatory as well as functional, eventuating often in partial loss of hearing, defects of vision, naso-pharyngeal catarrh, and other tormenting maladies.**

One of our acutest and most successful specialists in the treatment of nervous diseases has become so fully convinced by long experience of the part played by defective teeth in the development, not of neuralgia only, but even of the more obscure neuroses, that he always insists, as a condition precedent to the acceptance of the case, that a thorough examination of the cavity of the month shall be undertaken by a competent dentist, for, he says, not only may a single diseased tooth result in persistent nervous disturbance, but diseases of the brain, decay or perversion of the mental faculties, even epilepsy and tetanic spasms often have their starting point in dental irritations; and he has observed cases in which, while laying the foundation for a long, train of nervous troubles, the irritated organ itself gave no sign, either by local pain or vague discomfort, of the agency it was constantly exerting to produce serious disturbance at some distant point." - in "International Dental Journal", 1883.

Intestinal Disturbances

"Intestinal disturbances appear to be almost universally concomitant of pathological dentition. **The irritation of the 5th nerve, through the pulp, may result in a reflex irritation of the entire alimentary canal through the close association of the 5th and the pneumogastric**, and, as Musser in "Medical Diagnosis", has pointed out, **the Bacillus coli communis and Bacterium lactis deriformis may exist harmless in the intestinal canal under normal conditions, but may develop during periods of intestinal irritation.**

Then, again, products of incomplete digestion, due to its impairment, may set up a train of alimentary symptoms such as may be noted at this time, and, furthermore, the state of the child may be complicated by a condition of autointoxication due to the absorption of toxic substances from the intestinal tract rendered especially prone to putrefactive changes at this time.

Nervous Disturbances

In the severer forms of pathological dentition we may find further complications through a central nervous irritation.

At first spasmodic muscular contractions may be noted affecting the eyelid and lips; the fingers may be drawn toward the palm of the hand; or the toes toward the

sole of the foot; the child is listless and aroused with difficulty; from this listlessness it may pass into a state of unconsciousness, or it may give a sharp cry and with the eye turned upward unmistakably indicate the eclampsia.

Burchard in "A text-book of Dental Pathology and Therapeutics", regard the convulsive attacks as being indicative of a neurotic family type.

However, the factors of dentition are entirely competent to account for such attacks, and although neurotic conditions may predispose the child to convulsive manifestations, these may appear in the absence of inherited predisposition." - Dr Greenbaum, MD, DDS in "The Practice of Dentistry", 1912.

Preserve Your Teeth to Help Preserve Your Health

"Without good teeth there can not be proper chewing.
Without proper chewing there cannot be proper digestion.
Without proper digestion there cannot be proper nourishment
Without proper nourishment there cannot be good health.
Without Health, What is Life?
Decaying teeth make the mouth foul - make you repulsive to your neighbours.
Teeth Kept Clean Will Not Decay
95% of school children have defective teeth.
A Decaying Tooth Is An Incubator, For germs." - in "Chicago Health Department, Educational Poster, No. 123", 1920.

Chapter 45

The Role of Water in Emunctology

"You are 2/3 water, and because the water molecule is so small, that 2/3 translates into 99% of your molecules. Think of it 99% of your molecules are water." *- Dr. Gerald Pollack, University of Washington professor of bioengineering, 2013.*

Development of Fibrin

"Experiment 1: A portion of the white of an egg, or ov-albumen, was suspended in ropes in a glass vessel filled with pure water.

Experiment 2: A like portion was suspended in sea-water.

Experiment 3: The albumen was arranged in a similar manner in porter (dark beer, from brown malt).

Experiment 4: The albumen was suspended in ropes in the atmosphere.

In each instance, the substance was left to stand for a period of from 12 to 24 hours or more.

In No. 4 (the atmosphere), the water of fluidity was evaporated, and the rope of albumen remained in the form of a brittle, yellow, and still transparent rod.

In No. 2 (sea-water), a very slight change only was perceptible, viz., the formation of a thin and flimsy veil seen to envelop the suspended albumen. Here we have an illustration of the influence of neutral salines in the prevention of the development of fibrin.

In No. 3 (porter), the development of fibrin was evidently arrested, and a dark coagulous substance was seen to surround the albuminous product, of which hereafter.

In No. 1 (Pure Water), in a very short time a beautiful and opaque white veil began to appear upon the entire surface of the albumen. After a time, the albumen gradually exchanged its simple, granular, transparent, and homogeneous appearance for that of an opaque, white, fibrous, striated, and organised formation, as seen by the aid of a moderately powerful microscope.

Beautiful fibrinous threads, of the most delicate construction, were seen shooting in various directions, and clinging to contiguous objects, until ultimately the entire substance under the microscope was found to consist of striated bundles of threads, or fibrillae, resembling spun glass.

This experiment is now found to be effected with the greatest facility, by

dropping a globule of ov-albumen, or blood-serum, into pure water, under the microscope, when fibrin is seen to be formed in a few minutes." - Dr John Goodman, MD in "An Incontrovertible Argument in Favour of the Hydropathic System", 1878.

The Role of Water in the Human Body

"And now for the Water, the element that I trade in. **The water is the eldest daughter of the creation, the element upon which the Spirit of God did first move:**

> *"And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters." - Genesis 1:2*

The element which God commanded to bring forth living creatures abundantly; and without which, those that inhabit the land, even all creatures that have breath in their nostrils, must suddenly return to putrefaction. Moses, the Law-giver who was called the friend of God, names this element the first in the creation; this is the element upon which the Spirit of God did first move, and is the chief ingredient in the creation: many Philosophers have made it to comprehend all the other elements, and most allow it the chiefest in the mixtion of all living creatures.

There be that profess to believe that all bodies are made of water, and may be reduced back again to water only. **The water is more productive than the earth.**

Nay, the earth hath no fruitfulness without showers or dews; for all the herbs, and flowers, and fruit are produced and thrive by the water; and the very minerals are fed by streams that run under ground, whose natural course carries them to the tops of many high mountains, as we see by several springs breaking forth on the tops of the highest hills. Nay, the increase of those creatures that are bred and fed in the water, are not only more and more miraculous, but more advantageous to man, not only for the lengthening of his life, but for the preventing of sickness; for 'tis observed by the most learned physicians." - Izaak Walton

"Drink 2 litres of pure water every day (between meals, not with meals).

Food cannot be digested, assimilated and transformed into vital force without water, 68% of the human body is water.

It is essential to the circulation of the blood, laden with tissue building and energy producing food. It is likewise necessary in order to eliminate the waste and the poisons from the body.

The kidneys must be well flushed or they will become diseased.

Stomach and bowel troubles frequently may be cured by the free drinking of pure water. Without water, the blood will dry up and the muscles and tissues will become atrophied." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, Md., in "The New and Scientific Treatment of Chronic Diseases", 1914.

"It seems hardly necessary here to go into a detailed account of the necessity for a pure drinking water.

Certainly no agent is more important to the well-being of the human race - a fluid which constitutes about 3/4 of the human body and animal tissues generally; the universal solvent; the beverage of beverages, essential to the performance of all the vital functions.

As vegetation on the earth's surface would be impossible without moisture, so also would the human body soon cease in its vital phenomena without an adequate supply of hydrogen and oxygen associated in their proper proportions.

While it is essential for the performance of these offices it is equally necessary in removing the results of functional activity; namely, waste tissue products.

This brings us to the consideration of purity.

As water can hold in solution only a certain amount of solids, its solvent power in the system one of its chief effects is necessarily impaired when it is charged with compounds, organic and inorganic, and the waste products which it should take up and carry off through the Emunctories, accumulate and exert their deleterious effects, both mechanical and chemical.

While the system may combat for a time a certain excess of mineral impurities, they sooner or later make their effects manifest upon the excretory organs, the kidneys especially." - Dr Frank J. Thornbury, MD, in "The Increasing Pollution of Our Municipal Water-Supplies", Transactions of the American Microscopical Society, March 1897.

Drinking Water

"People in general are inclined to neglect the drinking of water. This is particularly true of the mentally ill." *- Dr Rebekah Wright, MD in "Hydrotherapy in Hospitals for Mental Diseases", 1932.*

Water in relations to Health

"Before we can clearly comprehend the remedial relations of pure water to the morbid conditions of the body, we must understand its physiological or vital relations to the healthy organism.

1. Water constitutes the greater proportion of the entire bulk of the body.

2. Water composes more than 3/4 of the whole mass of blood; more than 7/8 of the substance of the brain, and more than 9/10 of the various colourless fluids and secretions.

3. Water is the only vehicle, by which nutrient matters, are conveyed to the blood, and through the blood to all parts of the system for its growth and replenishment.

4. Water is the only medium, through which waste or effete particles, or extraneous ingredients, are conveyed from all parts of the system to the excretory organs to be expelled.

5. Water is the only solvent, diluent, and detergent in existence, for animal and vegetable alimentary and excrementitious matters.

6. Water is the only material capable of circulating in all the tissues of the body, and penetrating their finest vessels, without vital irritation or mechanical injury.

7. The only morbid effects of water result from improper temperature, and over-distension of the hollow viscera, or circulating vessels, from excess of quantity, effects never necessarily unavoidable." - Dr Russell Thacher Trall, MD in "The Hydropathic Encyclopedia", 1851.

The Role of Water in the Body

"Those who would enjoy good health should drink plain water in generous measure. Our body consists mainly of water, and the secretions, both external and internal, would fill an ordinary sized bucket in a day.

The brain itself, that most wonderful organ of the whole animal creation, is almost entirely composed of water. The millions of cells throughout the whole body need water all the time.

It is obvious, therefore, that if we are to maintain what may be called physiological balance, the secretions must be made good by a corresponding intake of water.

And for the cleansing of the alimentary canal and the passage of faecal matter an abundance of water is necessary, hard, dry faeces being injurious to the delicate bowel tissue." - Clement Jeffery, MA, in "Positive Health Without Knife or Drugs", 1928.

"Water is the Mother of Materiality. From Spirit the activity of Mind upon matter brings into being elements, as in evolution, that become manifested in materiality."

Water is the most important Physical Therapeutic Agent there is.

All others come second to the value, and application of waters infinite capabilities.

The Physical Body is made up of ¾ of water, therefore Water is as such an Essential Therapeutic Agent, it's influence upon the human body, at present time is beyond the comprehension of our "day and age" scientific knowledge.

Hydropathy a System of Therapeutics

"Water was thought to take the place, and stand in complete lieu, of the old drug medication, which it supplanted. And, in a certain measure, this was true; but it never would have occurred to any physiologist to give the whole of this

credit to the one element of water alone, passing over the equally important agents of: Air, Exercise, and Diet for the Body, and healthy Moral influences for the Mind, the whole of which, combined, go to constitute the means whereby what is termed Hydropathy really works its cures. **Hydropathy, then, is a System of Therapeutics based on a practical recognition and systematic carrying out of the organic laws of health, as these are developed and explained by physiological science.** Its rationale is based on one broad and distinctively characteristic idea, to wit, that nature possesses within herself, in the original construction of the living organism, her own means of restoration, when that organism is overtaken by disease; that she is constantly endeavouring to work out her own cure; that she frequently succeeds in her efforts without any external assistance whatever; and when her powers are not sufficient to this end, and the aid of art is to be invoked,that aid must be founded on a consideration of the primary laws of health as unfolded by physiology, and a main reliance reposed on a systematic application of them in the cure of disease.

In a word, Hydropathy is grounded, as a system of therapeutics, on the belief that the mass of chronic diseases are most effectually and most safely cured, by the identical means, infinitely modified of course, according to circumstances, that are requisite for maintaining the animal economy in health.

Its reliance is on the natural agencies of health. Its cardinal medicines are the apparently simple medicaments of Air, Exercise, Water, and Diet, which along with health Moral influences, compose its not very extended pharmacopoeia." - Dr Edward Wickstead Lane , MA, MD in "Hydropathy; or The Natural System of Medical Treatment", 1857.

Effect of Dehydration on the Spine

To maintain good spinal health, one must be well hydrated. The center of the intevertebral discs (nucelus pulposus) are 88% type II collagen water, and reduction in disc hydration results in Degenerative Disc Disease.

Spine dehydration can lead to pain, poor mobility, limited range of motion, and decreased flexibility.

The spine is the foundation for the body and provides the pathway for neural impulses.

When the spine is not properly working, some parts of the body including organs are directly and indirectly affected, some will have difficulty in working.

Other complications that can arise it may affect the workings of one or more body systems, such has the nervous, lymphatic and blood circulation, and the Emunctory system.

Water

"Among all the articles of nourishment called for in the treatment of acute febrile diseases, Water is decidedly the most important.

The febrile patient desires water and needs it, and it does no harm when not taken in too large quantities at a time.

There is no objection to its being drank cold except in diseases of the respiratory organs, in which it is better at about the temperature of the room.

In acute gastro-enteritis, ice and ice water are at times the only things the patient can tolerate; in peritonitis these are often our best means of al laying vomiting; and in the continued fevers the most grateful for the burning thirst.

Water should always be pure and fresh, and in typhoid fever, particularly, it is well to obtain the supply from a source other than that used before the illness.

Water should be offered frequently to those patients who, from excessive fever, no longer possess consciousness enough to experience thirst, and hence do not call for drink." - Dr William Caldwell, MD in "The Journal of Dietetics", 1887.

Chapter 46

The Role of the Sun in Emunctology

*"**Light stimulates the nerve ends, and thus enhances nutritive activity.** Experiments confirming the fact are cited by Roger. **If a man is brought from darkness into the light the carbon dioxide exhaled rises 14%, if the light is allowed to act on the whole body the increase amounts to 36%."** - in "Denver Medical Times", 1901.*

*"**Sunlight and Fresh Air by raising the bodily immunity have an important protective influence."** - Sir William Willcox, MD, FRCP, 1928.*

The Usefulness of Actinotherapy

"The major natural source of Vitamin D, is through ultraviolet radiation-dependent production in the skin. Vitamin D exerts a plethora of immunomodulatory effects, and low levels caused by lack of sun exposure or low dietary intake have been identified as an important risk factor for the autoimmune disease multiple sclerosis." - Olsson T, Barcellos LF, Alfredsson L. in "Interactions between genetic, lifestyle and environmental risk factors for multiple sclerosis", Nat. Rev. Neurol., 2017.

Sunlight & Ultraviolet Light Therapy

"Sunlight is as necessary to animal as to plant life, as the haemoglobin of the blood needs light to hold its colour, just as the chlorophyll of the leaf needs light to keep green.

The germs of tuberculosis soon die when exposed to direct sunlight, and there fore it is the dark and dirty nooks and corners of human habitations that foster and keep alive the plagues of humanity. For ages has man sought for some medicine that would antagonize and cure tuberculosis.

Even the great Koch was deceived into the belief that with the germ he had discovered its antidote; that the toxin which it elaborated should be applied to its own destruction.

But alas! what promised so well is now relegated to the case of the veterinary surgeon as one of the most accurate diagnostic agents in his possession.

After all the investigations and experiments of scientific men, the world has at last been confirmed in the belief that there is nothing yet discovered to take the place of God's fresh air and sunlight in the treatment of this disease, or, better still, in its prevention." - Dr George F. Keene, MD in "The Care of Contagion with

Special Reference to Tuberculosis", Charities The Official Organ of the Charity Organization Society of the City of New York, 28 July 1900.

The Influence of Pure Air & Sunlight Which Brings About the Cure of Pulmonary Tuberculosis

"It is the influence of the pure air and sunlight on the blood, and through it on all the other tissues of the body, and chiefly the nervous tissues, that the good results are obtained.

Fresh Air heightens metabolism in every way, and raises all the tissues to their highest point of resistance, so that they do not succumb to the persistent attacks of the poisons constantly carried hither and thither by the circulating blood.

The nervous system responds the most readily to the purer and richer pabulum brought to its inmost recesses by the blood, and as its cells are better nourished, so its trophic influence is maintained, and the metabolism and growth of all tissues, including the all-important haemopoietic (formation of blood cellular components), is ensured and maintained at its highest, and they are thus enabled either actively to beat off, or passively to refuse to succumb to, the specific poisons of any disease.

Open-air life improves the appetite. Carefully graduated exercise, increases the appetite and stimulates the Emunctories, and helps the elimination of their excreta." - Dr E. H. Douty, MD, in "The Open-Air Treatment Of Syphilis", The British Medical Journal, 28 February 1903.

Chapter 47

The Role of Oxygen in Emunctology

"Crofton states that: "A uric-acid case should be treated as an anaemic case", and advises the employment of "measures employed to promote the oxygenation powers of the blood."

He found the use of iron and inhalations of oxygen of great value.

Referring to the use of oxygen in migraine, he says:

"The benefits derived from the procedure are surprising and most gratifying, and the relief to the patient is almost instantaneous." - in "The Monthly Cyclopaedia of Practical Medicine", February 1902.

> ***"Hyperbaric Oxygen Treatment has been operating in Russia since 1965. They have used it widely and have had very dramatic results, they've got figures showing they can Detox people in half the time that it takes conventionally."*** *- Peter McCann, HBOT Trust, 2019.*

> ***"Hyperbaric Oxygen Treatment can provide an important weapon in the fight against numerous disorders."*** *- Dr. Richard Neubauer*

> *"Giving more oxygen is sound science and common sense. There is no substitute for oxygen." - Prof. Philip B James, MB*

The Usefulness of HBOT: Hyperbaric Oxygen Therapy

"In addition to immunological and wound healing cell, and platelet delivery, ion stasis and nutrient supply, blood delivers oxygen to cells and tissues and removes metabolic wastes.

For decades researchers have been trying to develop approaches that mimic **these two immediately vital functions of blood.**

Oxygen is crucial for the long-term survival of tissues and cells in vertebrates. Hypoxia (oxygen deficiency), and even at times anoxia (absence of oxygen) can occur during organ preservation, organ and cell transplantation, wound healing, in tumors and engineering of tissues.

Different approaches have been developed to deliver oxygen to tissues and cells, including Hyperbaric Oxygen Therapy (HBOT).

Metabolic waste accumulation is another issue in biological systems, when blood flow is insufficient.

Metabolic wastes change the microenvironment of cells and tissues, influence the metabolic activities of cells, and ultimately cause cell death.

Oxygen (O2) is crucial to the survival and metabolism of aerobic cells.

Oxygen tension influences numerous cellular activities, including cell proliferation, cell differentiation, glycolysis, apoptosis, angiogenesis and gene expression. Under severe hypoxia (oxygen deficiency), cell apoptosis and even necrosis can occur.

On the other hand, high oxygen (hyperoxia) concentrations can also result in cell death, generally by causing excessive reactive oxygen species (ROS) generation and hydrogen peroxide production.

Cells are able to adapt to the changes in oxygen tension within a small range by changing their cellular activities, which can be partially reflected by the oxygen consumption rates of cells.

The oxygen-tolerant limit of several cells and tissues

Different types of cells require different oxygen concentrations to maintain their normal metabolic activities and have different sensitivities to variations in oxygen level. The oxygen tension of tissues ranges from 1% to 10%.

Physiologically, oxygen is delivered to local tissues and cells by diffusion in the form of molecular oxygen dissociated from hemoglobin in red blood cells.

Soluble metabolic wastes are removed from tissues and excreted from body mainly through the lungs and kidneys." - Huaifa Zhang, Jake E. Barralet, in "Mimicking oxygen delivery and waste removal functions of blood", Advanced Drug Delivery Reviews, 2017.

Oxygen Therapy

How Does Oxygen Help the Body?

Oxygen plays a key role in the healing and repairing of damaged cells in our bodies, but often the flow of oxygen is blocked and the healing process takes much longer. **All cells benefit from exposure to oxygen,** for example a cut on the knee will heal more rapidly if the air is allowed onto it.

Does it Help the Brain?

Years of alcohol, tobacco and drug abuse can result in brain damage and a prematurely aged brain. Initial evidence suggests that HBOT may have a role in rejuvenating and rebuilding patients' brains and hence their lives. A hyperbaric chamber can supply pure oxygen to the brain, stimulating the production of new blood vessels. New research shows that increased oxygen flow in the blood can result in the awakening of dormant cells in the brain and the creation of new ones (neurogenesis).

How Does it Work?

"Oxygen is dissolved in the blood and transported, in combination with haemoglobin in the red blood cells, throughout the body. This dissolved oxygen passes into the tissues. Breathing high levels of oxygen under hyperbaric conditions causes greater uptake of oxygen by the bodily fluids and so more can reach areas where the circulation is diminished or blocked and therefore improve recovery. The extra oxygen greatly enhances the ability of white blood cells to kill bacteria. It also reduces swelling and allows new blood vessels to grow more rapidly into the affected areas." - HBOT Trust, 2019.

Contra Indications

There are some rare contra-indications for HBO treatment such as sinus pain, claustrophobia and myopia.

However, the medical textbook "Hyperbaric Medicine Practice, 1994" states:

"Of all the medical treatments carried out in hospitals, hyperbaric oxygen treatment is one of the most benign when it comes to side effects."

Brain Regeneration

"In 2016, a 2 year old girl drowned in a pool at her home.

The girl was submerged between 5 to 15 minutes, her mother started CPR, in 10 minutes the Paramedics arrived, the girl organs where not working, and was dead on arrival at the hospital.

After 100 minutes of continuous CPR, the girl was miraculously revived, but brain dead.

Doctors of Medicine told her parents, that if she survives the next 48 hours, she would permanently be left in a vegetative state, with no brain activity, and no medical treatment available.

Her parents immediately start to research an alternative, their research led them to Hyperbaric Oxygen Therapy, which enhances the body's natural healing process by inhalation of 100% oxygen.

Just after 40 Hyperbaric Oxygen Therapy sessions, the girl went from a vegetative state to being able to pulling herself to stand and taking some steps, all her speech returned, she became the first person (properly recorded) to regrow brain tissue, with her brain MRI as normal." - in "Longevity the Untold Story", 2019.

Chapter 48

Sea Water

"And first, to pass by the miraculous cures of our known baths, how advantageous is the sea, how does it not only furnish us with food and physic for the bodies, *but with such observations for the mind as ingenious persons would not want." - Izaak Walton*

An Emunctologist recognizes the 4 basic components for the body

1. Water
2. Salt (sea salt)
3. Iodine
4. Calcium Carbonate

Hypodermic Use of Salt And Water

"An interesting article appeared only, lately in the Przeglad Lekarski, xxvi. 33, 35, 1887, by Dr. Rosenbuch, relating to the value of hypodermic injections of salt and water.

Cantani's work concerning its value in cases of cholera suggested its use to the author, who tried it in cases of long diarrhoea, vomiting, and hemorrhages, and observed both a nutritive and a stimulative action upon the cardiac muscles.

He used a 6%, solution, of which he injected from 5 to 20 grammes at one place.

Dr. Rosenbuch never observed any inflammation or the formation of an abscess to follow its use.

After 20 or 30 grammes had been injected, the pulse would become slower and fuller in 3 to 5 minutes.

This improvement would last for several hours.

The following symptoms the author considers to indicate the above treatment:

1. Sudden collapse.
2. Heart-failure in acute diseases.
3. Gastro-enteritis acutissima.
4. Hemorrhages of the lungs, stomach, or bowels.
5. Cachexia during chronic ailments. 5 grammes (1 gramme=16 minims) of the solution may be injected daily in the latter."

- Schmidt's Jahrbucher der Gesammten Medicin, Jahrgang, N.11, 1887.

The Therapeutics Effects of Saline Injections

"Lochelonge (Th. de Paris, No. 6, 1896-97) traces the history of this treatment from its introduction by Joehrnichen, of Moscow, in 1830 to its discussion in the Academy of Medicine and Society of Biology last year.

In infectious diseases the injections are in variably followed by a well-marked rigour like that of pneumonia, the temperature rises, perhaps to 105.4 F, with a quick pulse, and panting respiration.

These symptoms gradually improver perspiration sets in freely, and in from 3 to 4 hours a feeling of comfort supervenes, the headache disappears, the temperature rapidly falls to normal, the Emunctories become active and a veritable polyuria, or occasionally a profuse diarrhoea is established.

If this improvement be not permanent another injection generally makes it so.

Unhappily the system is sometimes so profoundly infected that death is hardly, if at all, postponed.

The action of these injections in:

1. Cholera.
2. Pneumonia.
3. Typhus and Typhoid fever.
4. Scarlatina, etc., as well as in,
5. Diabetes.
6. Uraemia.
7. Paroxysmal tachycardia.

They have in all cases been followed by improvement of the general condition, lowering of the temperature, abundant diuresis, and increase of the blood pressure.

Mourette (Th. de Paris, No. 40, 1896-7) **points out that intravenous injection aggravated and subcutaneous injection of saline fluid ameliorated** the condition of a patient of Delbet's whose heart was apparently at fault, and that a typhoid patient of Widal's, twice benefited by a subcutaneous injection succumbed during an intravenous one; he also mentions a fatal case of Chauffard's from the same cause. He concludes that **intravenous injection should not be employed** if it is possible to wait for 1 hour or 2; subcutaneous injection, though slower, is equally sure, and from it no accident has been reported.

Fourmeaux (Th. de Paris, No. 82, 1896-97) discusses the subcutaneous method very fully, both from the experimental and the clinical point of view, and gives a detailed and illustrated description of the technique.

He agrees that the subcutaneous method is as efficient and less dangerous than the intra venous, and advocates the injection (about 600 g.) as often as may be indicated during careful observation day and night. In diffuse haemorrhage the

dose should be from 200 to 300 g. only.

The injections are useful in shock and infection as well as in haemorrhage; fever is no contraindication; hypothermy is not to be feared.

Moreover, they may be used before or after operation on anaemic subjects by the surgeon, and should be in readiness during any intervention that is likely to be protracted. As a general tonic before, and more especially after, operative treatment." - in "The British Medical Journal", 30 January 1897.

A Note on Saline Injections

"The introduction of normal saline solution into the circulation to counteract shock, to dilute and alter the composition of the blood, or to replace its loss from haemorrhage, is a therapeutic measure of proved utility.

And with its more frequent application comes a proportionate increase in the number of morbid states in which it is found to be of value.

There are 3 methods of injection:

1. Intravenous.
2. Subcutaneous.
3. Rectal."

- Dr George Maguire, MD, in "A Note on Saline Injections", International Journal of Obstetrics & Gynaecology, June 1902.

"A similar tube is now passed into the rectum, and the lower bowel is lavaged with copious quantities of warm water. This plan is much more efficient in bringing about an action of the bowels than other forms of enemata. Before finally withdrawing this tube as much saline solution is poured into the bowel as it will contain." - Professor E. HastingsTweedy, FRCPI in "A Discussion on the Treatment of Albuminuria and Eclampsia Occurring in Pregnancy", British Medical Journal, 23 September 1905.

"I believe it is important to eliminate the poison as much as possible by the Emunctories, and I consider the saline treatment has much to recommend it. The saline tends to stimulate the kidneys and dilute the poison." - Dr Henry Corby, MD, Professor of Midwifery, Queens College, Cork in "A Discussion on the Treatment of Albuminuria and Eclampsia Occurring in Pregnancy", British Medical Journal, 23 September 1905.

"Uraemia and shock, the most common causes of death in my experience, I now anticipate by intestinal saline injections after completing the operation. This is repeated as indicated. (In one very bad case of shock I saw a patient who was almost in articulo mortis (at the point of death) saved by an injection suggested and, carried out. In addition to this, uraemia is combated, or rather anticipated, by attention to skin, kidneys, and bowels." -

Dr George A. Bingham, MD in "Discussion On Enlargement Of The Prostate And Its Treatment", The British Medical Journal, 10 November 1906.

Sea Water And The Theory of Cellular Life

"René Quinton, Assistant Professor of Physiology at the College de France, began to be haunted by the idea that, all cellular life having originally sprung from the bosom of the ocean, some trace of the pristine medium must be still extant in all the representatives of planetary animal life even to this day.

That life on the planet took birth in the vast expanse of the waters which covered the surface of the planet, it is no longer possible to deny.

Both geology and paleontology concur in testifying to the reality of the great fact. The temperature of the ocean when life first appeared in its bosom must have been about 44° C.

Such was the pristine vital medium of the primordial cells that felt the initial thrill of life. All animal forms that have appeared since the most hoary period of earth's vital career, even to those which had been able to emigrate into fresh waters or live in the air, are proven to have retained a blood plasma the mineral composition of which is extremely akin to that of sea-water itself.

It looks as though all living species had carefully taken away with them a fraction of the ocean that bathes their tissues.

Therefore are we compelled, according to Quinton's own expression, to view:

"The living organism as a sort of marine aquarium, wherein continue to live in the original aquatic conditions the cells whereof it is built."

Of course, it is all right in one way to say that blood is thicker than water; but this hardly applies to sea-water, which appears to be the blood of the planet.

We are at once struck by the character of fixity evinced by the living cells throughout the zoological series as they maintain the integrity of the original marine medium.

When we give it serious thought, it is truly stupendous that, notwithstanding the innumerable types of marine, terrestrial, and aerial forms into which life has budded forth, from the earliest ages to this day, the ancestral tendency should have suffered practically so little deviation. Apparently Life has learnt its lesson and is not likely to forget it. It knows, enough of chemistry to concentrate or dilute the salts of old ocean according to an invariable standard, and even to maintain almost the original temperature of the primeval great waters.

This new principle as worked out by Quinton, the immutability of the internal saline medium. If life appear to be mobile and plastic and shifting with regard to external forms, the stability of the internal medium within the sacred precincts of

the living cells is firmly rooted in the inherited memory of nature.

Such therefore is the law. Animal life shall be carried on within a marine medium or it shall not be at all.

The transgression may not be immediately fatal, but disease is invited and death the conclusion, unless a return to the natural status be instituted in time.

Experiments of Quinton in Support of his Theory

Here is a dog in full health. It is bled almost to death.

To all appearances the animal seems to be beyond recovery.

At this critical juncture sea-water is injected into its veins.

As if touched by some magic wand, the animal begins to breathe again, the heart revives; now the animal is stirring; in a few minutes it gets on its legs again, wags its tail and runs about the laboratory, apparently unconscious of the appalling danger it has incurred.

A few days after the experiment the animal shows extraordinary vitality; its blood upon analysis contains a larger proportion of haemoglobin than before.

It may be objected that an ordinary injection of the so-called artificial serum (that is, a solution of chloride of sodium in water in the proportion of 7 per 1,000) would have had pretty nearly the same result. Such is not the case however.

It is well known nowadays that large injections of artificial serum are followed by a dangerous retention of the chlorides in the system, amounting to a real toxication, and that generalised oedema is sure to follow in the wake.

Quite recently Dr. Rossle, of Berlin, has reported two cases of death supervening after rather large injections of artificial serum (about 1 litre) had been practised. No such danger could ever be incurred with sea-water injections.

This is easily explained when we bear in mind how exquisitely sensitive the living cells show themselves to the slightest change in the chemical medium wherein they are called upon to live.

Some people might think that sea-water is not far different from a solution of salt-water.

But this crude notion is very wide of the truth.

Sea-water is much more complex than appears at first sight.

It is not merely a solution of chloride of sodium, or kitchen salt; besides other saline constituents it is shown to contain in a state of extreme division 17 metals and metalloids, among which are boron, bromine, iodine, arsenic, copper, lead, zinc, silver, gold, strontium, caesium, rubidium, etc.

The remarkable thing is that all of these constituents are found in exactly the same proportions in the fluids of the human system.

It is to be supposed that each of these bodies, some of them quite rare in nature, plays a part, exerts some recondite influence upon our cellular life.

The whole secret of the wonderful effects of sea-water injections applied to the diseased human organism may reside in the presence of these precious metals, in almost infinitesimal proportions, and endowed therefore with obvious radio-

active properties.

This is distinctly Quinton's conviction, and he admitted it frankly in a private conversation I had with him. I need press this matter no further. A hint to the wise is enough. It may therefore be claimed that sea-water injections act not so much by dint of their saline constituents as through their dynamic properties.

At all events, every attempt at preparing artificial sea-water has met with lamentable failure.

E. P. Lyon evidently thought he had solved the problem When, having evaporated a certain quantity of sea-Water, he dissolved again the salt thus obtained into the same quantity of distilled water.

There was a saline solution, indeed, apparently identical with the original sea-water. To test the matter he deposited in the solution fecundated sea-urchin eggs; but these soon died. Evidently this solution lacked some essential imponderable element which sea-water possesses.

Another telling experiment is that performed upon the leucocytes. It is well known that the white globules of the blood are very exclusive and reticent micro-organisms, sternly refusing, it was thought, to live in any fluid medium but the blood or lymph plasma.

Quinton quietly prevailed upon them to live quite comfortably in tepid sea water - Only the latter must be made isotonic with the blood plasma, which is easily done by mixing 2/3 of pure fresh water with 1/3 of sea water.

When we bear in mind the extraordinary sensitiveness exhibited by the living cells - even to those endowed with a lower degree of vitality - to the slightest variation of the chemical medium wherein they are wont to live, we are quite safe in considering the above test as final.

No finer reagent could ever be found, no better witness brought into court, than the leucocyte.

We are now prepared to understand what We can expect from sea-water in its application to the healing art.

Let us consider the subject first from the theoretical point of view.

If the principle be true that isotonic sea-water is the exact counterpart, prepared by cosmic hands, of the vital fluids circulating in our system and bathing our tissues at large, we should be able to inject almost any quantity of it into any living creature without exciting any or little functional trouble.

That such is the case no reasonable doubt can be entertained.

While even moderate injections of artificial serum may bring about a sort of experimental oedema, through retention of chlorides in the system, Hallion, Quinton, and Julia have shown that if isotonic sea water be used, a much larger quantity thereof will be easily tolerated, no oedema or retention being created.

Moreover, it has been conclusively shown that if isotonic sea-water be injected into a healthy dog so as to regulate the influx by the rate of the animal's urinary elimination, it is possible to drive into the canine organism twice its own weight of isotonic sea-water without inflicting any symptom of saline retention.

Better still: suppose you have started injecting artificial serum into the dog and

the consequent saline retention and oedema have made their appearance; if you now substitute artificial serum for isotonic sea-water, and watch the result, little by little you will see the oedema disappear and an abundant urinary discharge take place, showing the renal equilibrium to have been regained.

We now easily understand the logical sequence whereby Quinton's practical mind was led step by step to the therapeutic application of his great discovery.

There was at last found a truly natural serum, the only one that could boast of mirroring without a flaw the mineral constitution of the human blood plasma, and shown by repeated experiment to be consonant with its chemical life, being entirely congenial to its inner receptivity.

Principle of mineral stability of the living cell - a stability which bears the seal of the unswerving fixity of purpose characteristic of the Infinite Mind.

It appears from reliable statistics that fair France, so mild in other ways to her children, suffers an annual loss of 70,000 babies through the dreaded gastro-enteritis of the new-born.

The little ones become rapidly unable to take nourishment; their vital fluids are drained off, and death supervenes through sheer inanition.

Here it is that the marine plasma asserts its almost incredible superiority over all other forms of medication.

The physicians who have witnessed the results obtained in cases that seemed beyond redemption express themselves in terms of enthusiastic admiration.

Truly the effects of isotonic sea-water upon the infantile organism in all cases of green diarrhoea, cholera infantum, or whenever there is a rapid falling off of vitality through loss of bodily fluids is little short of miraculous.

Think of it! most of the time all that is required to bring about this astounding cure is one injection of 10 grams (cubic centimetres).

A few hours after treatment the child is a different creature; it takes the breast again and thrives.

Seldom has another injection to be resorted to.

The men in power, I mean the chief exponents of official medicine, have tried to be sceptical, as ever they do, when confronted by some discovery that does not proceed from their holy body.

And then this man Quinton, moreover, is not even a physician.

Think of it! What right has an intruder to take it into his head to cure the sick?

This privilege belongs to the faculty alone, and only along the approved methods, of course.

But the powerful current created by the miracles performed every day in the marine dispensaries proves to be too much even for official scepticism and reticence.

The women, the mothers of France, are in a fair way to win a signal victory in favour of honest, liberal, independent therapeutics.

The explanation of the miracle lies in the magic touch of the elemental life of the ocean to the life of the child. It all comes of the great fact that we are much older than the days we have seen and the breath we have drawn, much older than the

hills. It also comes of the yet unrecognised fact that our individual lives are the circumscribed synthesis of the abiding reserves of elemental life throbbing through out earth, air, and water.

The elemental life of the ocean we begin to appreciate.

We have succeeded in capturing a feeble part of its boundless energy, the wise ones who live in close touch with nature know in some vague way the feeling of invigoration and renewed health that comes of prolonged contact with the soil; this is telluric elemental life.

Then, again, all of us who have been fortunate enough, of a fine, warm summer day, to stroll along a pinewood on the hill-side, dreamily listening to the aeolian melodies whispered by the passing breeze through the millions of vibrating pine-needles, cannot help having experienced a delightful sense of larger breathing power, of increased strength, or, as it were, of a higher tide of life.

The reason of this is that pine-needles have learnt the secret of distilling a few faint waves of the great ocean of elemental life that surges throughout the vast sweeps of the etheric realms.

The Marine Plasma And Its Therapeutic Applications

On its application save 80% of all babies afflicted with bowel troubles.

The field of beneficence of the new method is of far wider importance.

Most skin diseases, chiefly eczema, fall within its sphere of activity; likewise, varicose ulcerations, so rebellious and obstinate, the bane of the surgeon.

Rickets are very favourably modified.

Many gastric and intestinal difficulties, that had defied all known forms of medication, have rapidly yielded to the plasma.

Stubborn constipation is frequently vanquished.

This alone would prove to thousands an incalculable boon.

Chronic paludism and typhoid fever have been treated with success, as well as many cases of digestive auto-intoxication. In that respect it is only fair to cite cases of obscure appendicular trouble.

Lupus heading the list, we may take it for granted that any form of morbid condition of the skin may be brought under speedy control by the marine treatment.

Acne, freckles, and even wrinkles are promptly taken care of.

Generally, one of the first effects noticed upon patients under treatment is the rapid improvement of the complexion, the oily condition of the skin being readily removed.

The reason thereof is plain enough, the skin being the chief way out for the toxins of the system and sea-water being a wonderful help in all forms of toxication.

One of the most remarkable cases of cure, how ever, and such as will raise great expectations in the treatment of generally very hopeless forms of disease, is the following one, cited by Dr. Robert Simon, of Paris:

It was a case of chronic nephritis, with the wonted diminution of renal permeability to the chlorides and a consequent oedematous condition of the integument.

According to the accepted theory of treatment, based mainly upon the suppression of the chlorides from the diet, it was rather paradoxical to try the marine plasma.

Dr. Simon proceeded, of course, with the utmost caution, feeling his way by means of daily urinary tests.

The patient was forty-eight years old, of alcoholic habits, and had been ailing with Brightic symptoms for the last 6 years.

The main symptoms were generalised oedema, pronounced dyspepsia, insomnia, 5 grams of albumen. Under the marine treatment, after the second injection, a marked improvement is experienced, the oedema begins to recede, the urinary excretion is increased.

The treatment was continued at the rate of 200 grams injections every 3 days, and after 23 days the oedema had totally disappeared, the scales showing that the patient had lost 9 kilos of bodily weight owing to the disappearance of the oedematous fluid.

The patient now breathed easily, slept well, and could walk about the ward.

Another large class of patients that may expect relief and cure from the marine treatment is that of the neurasthenic affections.

Whatever theoretical conception we may form of neurasthenia, we all agree upon a certain set of symptoms, which we have learned to consider as characteristic, viz.: insomnia, or sleep troubled by nightmare, lack of bodily strength, digestive perturbations, headache, inability for mental work.

All of these symptoms are readily ameliorated and frequently removed by the marine plasma, insomnia being the first to be modified.

All suppurative conditions, whether of the integument or of the internal organs, such as boils, ulcerations, and abscesses, are rapidly influenced.

This beneficial result is most marked, however, in scrofulous affections of children, where the effects are little short of marvellous.

It can be safely stated that in all pre-tubercular affections the marine plasma exerts a predominant influence, and bids fair to render invaluable service.

I have personally been experimenting upon the plasma for the last 2 years with a noble measure of success, and by way of illustration of what it can accomplish in the line of internal suppuration, I submit the following case from my own practice:

A Belgian nobleman, Baron A., about 46 years; he was ailing with a severe form of infectious influenza, in the course of which he developed pleuro-pneumonia of the right side.

This, however, was getting under control when a new pneumonic area developed in the lower left lobe.

We all know the bad reputation that attaches to those serpiginous cases.

The patient's strength being at a low ebb, the latter pneumonic process never resolved properly, and after a time, a large pulmonary abscess was established.

The general condition of the patient was very critical; marked dyspnoea and paroxysmic fits of coughing troubled him day and night, and the temperature, which of late had been hovering around 104°, threatened to climb higher.

A surgeon was called in, but refused to operate. Fortunately at this juncture a large vomica formed, which relieved the patient very much, but the resistance of the organism was pretty nearly exhausted, and there he Was, with a pulmonary suppurating cavity, in a very perilous situation indeed.

Then it was I bethought myself of the marine plasma. I gave an injection of 100 grams every other day. Even after the second injection the patient noticed an improvement, which steadily asserted itself.

The purulent expectoration and the cough diminished right along, the temperature gradually fell to normal, the appetite and strength returned, and 6 weeks after the first injection a cure was effected.

One of the remarkable features of the case was the rapid disappearance of a pronounced clubbed shape of the finger-tips of both hands, which had become quite noticeable during the evolution of the pulmonary abscess.

The gynecologist will be interested to hear that almost all of the painful symptoms connected with the functional utero-ovarian perturbations, and which may be more or less ascribable to some special form of toxication, are readily removed by the plasma.

There is a class of women wherein the following symptoms are always found associated: dysmenorrhaea, constipation, migraine.

There may be found concurrently a more or less pronounced anaemic condition, and not unfrequently some degree of enteritis.

This is the favourite field of the plasma to do its good work.

Only a few words remain to be said with regard to the preparation of the marine plasma: Ocean Water alone is to be used. The supply is inexhaustible.

This sea-water, however, has to be obtained away from all sources of pollution, as far as possible from shore and at a depth of at least 12 yards, in order to avoid the superficial bacterial colonies that may be afloat.

This Water should be collected into large sterilised glass jars, then rendered isotonic, which is done by mixing 1/3 of the sea-water with 2/3 of a very pure and light spring water, then filtered upon absorbent cotton first, then through porcelain filters, carefully sterilised.

During these various processes the water should be kept as cool as possible.

Then it is drawn up into sterilised bulbs, the extremities of which are immediately sealed.

Under no consideration should the Water thus prepared be sterilised by boiling or by the auto clave process.

Not only does sea-water, thus treated, lose its therapeutic properties, but it has been shown to become toxic.

This appears quite paradoxical at first, but it should be borne in mind that the marine plasma is not at all a simple saline solution; to all intents and purposes it is, and behaves like, a qualified living solution, and it has to be treated as such.

It will not keep more than 2 or 3 weeks; that is, if used after that lapse of time it will retain little or none of its activity.

It will keep better if placed in a cold medium, in an ice-box, for in stance, just as you would keep meat or fish or any animal food.

The technique of the hypodermic injection, the dose, the frequency of repetition of the same, are not for present consideration. There has been published sufficient literature on the subject. (See Book: "Sea Water Treatment" Roberson Day, 1914).

Conclusions

A message of love and redemption comes to man, and it sounds forth from the great deep.

Man, like his lower brothers, now appears on the world's stage as a colony of oceanic cells, a kind of saline aquarium, endowed with motion and conscious life, wherein breathe, act and react the various powers constituting the individuality.

Each of us carries along in his inner little world a small sea, amounting to a third of his body's weight, whose tiny ripples beat with measured rhythm against the shores of our organs.

Yonder girl, who tips the scale at 55 kg, bravely harbours in her dainty anatomy 18 kg of Atlantic surf or of Mediterranean sapphire wavelet.

It should be well understood that we have no longer to deal here with a specific serum, calculated to exert its specific energy against one particular microbic cell and its toxins. It is a different theory from that of Pasteur.

This marine serum is not a war engine, bent upon the destruction of this or that pathogenic micro-organism. It is a sort of a pabulum vitae, meant for the benefit of the living cells of our tissues at large; a sort of cosmic food, needed mostly, however, at both extremes of life." - Dr Bernard S. Arnulphy, MD in "Medical Century", August 1908.

Special Note

When collecting sea water for therapeutic usage, the same needs to be checked for the presence of pathogens, such as Bacillus Proteus. Proteus bacilli are widely distributed in nature as saprophytes, being found in decomposing animal matter, sewage, manure soil, the mammalian intestine, and human and animal faeces.

They are opportunistic pathogens, commonly responsible for urinary and septic infections. Therefore there is a method to be followed to collect sea-water.

Iodine

"There are few people who have not had some portion of their body painted with iodine, that old-fashioned and still popular remedy. This remedy has interesting phases beside its ability to give brilliant hues to the human body." - in "Pacific Pharmacist", Vol. 10, 1916.

Iodine Internally as an Alterative

"Since the days of Coindet, Brera, Lugol, and Manson, the medical profession has been fully impressed with the value of the internal administration of iodine for its alterative effects.

Every practitioner of any experience has seen numerous cases where various tumefactions, glandular enlargements, and even what seemed to be tubercular and carcinomatous conditions, were greatly improved and seemingly cured by this remedy.

Iodine is like chloride of sodium, to be one of the natural constituents of the human body. Given in medicinal doses it is of great value.

From clinical observation extending over along period of years, I am convinced that it acts beneficially chiefly in that it is a special stimulant to that function of the body by which all of its parts are under going continuous disintegration and renewal.

It stimulates and assists in the exchange of products, aiding assimilation, elimination, and the metabolism of tissues; in other words, under its administration there is a stimulation of the activities of the secretory system of glands.

Digestion is thus improved and nutrition is encouraged; waste products are more rapidly carried away, and tone and vigour result.

Knowing the sluggish state of the system in the scrofulous condition (that indefinite expression covering a multitude of sins as it does; sins that may be of remote ancestry); and in those conditions dependent upon later individual sins upon the part of the victim, coming under the head of specific diseases, where an even greater stasis upon the part of the secretory organs is present; and in that indefinite state known as the rheumatic, which is after all better expressed by the term Lymphostasis, or a Stasis of the Lymph Vessels; Iodine is the ideal remedy.

For long the problem has been how best to give this remedy.

Given direct in the form of tincture largely diluted, it soon becomes an irritant to the stomach.

But how often do we find the stomach rebels against it; how often do all of the mucous membranes of the body become riotous and resent the intrusion of the remedy." - Dr I. N. Love, MD, in "Medical Mirror", 1894.

"Dr Richard Russell, One of his patients was a woman with a large scrofulous tumour stretching from the ear to the collarbone. She drank 25 gallons of sea water in one continuous course of purging, at the rate of a pint each morning, and was cured (A Dissertation on the Use of Sea Water 1752). Many other doctors began to publish tracts on sea bathing, among them Dr John Awsiter, also of Brighton (Thoughts on Brighthelmston, Concerning Sea Bathing 1768). The sea, it appeared, would dispel not only scrofula but gout, constipation, melancholy, hysteria." - E. S. Turner, in "Taking the Cure", 1967.

Chapter 49

The Importance of Salt

"Dr J. S. Sutcliff in "Journal Kansas Medical Society", reminds us that **sodium chloride is one of the most necessary mineral ingredients of the human body; it maintains the normal osmotic states, aids in removing toxic materials, and promotes the functions of the individual cells.**

As the human body eliminates about 16 grams of this salt every 24 hours, the diet must contain enough to replace this loss.

If the supply of salt becomes insufficient, all the functions are disturbed.

Salt, given in the form of capsules, induces thirst, increases peristalsis and diuresis, and thus supports elimination and aids the vital processes.

It is used for subcutaneous or rectal injections in many infections, septic, and febrile conditions where it is of more value than any other form of medication." - in "The Medical and Critic Guide", 1920.

Salt Depletion

*"**A salt-free or salt-poor diet has been found to reduce the amount of fluids in the body.**" - in "The Medical and Critic Guide", July 1920.*

"**For the healthy functioning of the body it is necessary that the sodium and potassium salts in the body fluids should remain at a normal balance.**

This proportion is mainly regulated by the kidneys.

This danger is associated with great depression of the renal functions, and the symptoms which appear resemble those of uraemia, and indeed this complication soon follows.

The initial indications of salt depletion are those of lassitude or even lethargy; there is frequently some mental confusion and this is likely to be attributed to the sedatives which the patient may be taking.

Similarly, nausea and vomiting which are very frequent symptoms are likely to be ascribed to the digitalis which is usually given to patients with congestive cardiac failure. The most characteristic symptoms, however, are muscular cramps and abdominal pain.

Salt Depletion Test

There is a very simple test which establishes the diagnosis of salt depletion.

Ten drops of urine are measured into a test tube, with a pipette. This is rinsed

out with distilled water and one drop of a 20% potassium chromate solution is added. The solution in the test tube becomes yellow.

To this is added, drop by drop, a 2-9% solution of silver nitrate, until there is an abrupt change from yellow to brown. The number of drops required to effect this change, indicates the chloride content of the urine in grammes of sodium chloride per litre. If the colour change occurs after the first drop, it means that there is a state of salt depletion, and the absence of chloride from the urine means that the sodium chloride in the plasma has fallen below normal.

A low urinary output of chlorides is always associated with a diminished excretion of urine and with nitrogen retention. Renal activity ceases and death from uraemia follows.

There are many conditions of disease wherein salt depletion occurs, as a result of its excessive excretion. Thus, it occurs when there is excessive sweating; there are some 4 grains of sodium chloride in 100 c.c. of sweat.

Diarrhoea and vomiting are responsible for the loss of much salt. Similarly, when drainage of the stomach or intestine is carried out, there is considerable loss of salt. Addison's disease is another important cause of salt loss. We have already stated that some of the glomerular filtrate, which contains sodium chloride, is reabsorbed in the renal tubules.

This absorption does not depend only upon osmotic pressure. The adrenal cortical hormones, especially deoxycortone, are concerned in this action and therefore when they fail, as they do m Addison's disease, adequate reabsorption of sodium chloride does not occur and the salt is excreted by the kidneys.

For this reason, the administration of sea salt is so important in the treatment of Addison's disease. It compensates for the salt depletion.

When the kidneys excrete an excessive amount of salt there is necessarily an increased excretion of water so that secondary dehydration occurs.

The body weight does not fall so rapidly as in primary dehydration which is concerned with water depletion alone. In primary dehydration the loss falls mainly on the intracellular fluid; in salt depletion the loss falls on the extracellular fluid. In simple water depletion, the extracellular fluid is first drawn upon, and therefore this becomes hypertonic in relation to the intracellular fluid.

Water is therefore sucked out of the cells in order to restore osmotic equilibrium between the intra- and extracellular fluid, and the volume of the latter is therefore maintained to a great extent.

In salt depletion the extracellular fluid would soon become hypotonic in relation to the intracellular fluid, if it were not that the kidneys excreted an additional amount of water to correspond to the loss of salt, and thus the tonicity of the extracellular fluid is maintained.

The signs of salt depletion resemble those of acute peripheral failure of the circulation. The face looks pinched, the checks are sunken, the lips are bluish, the skin loses its elasticity and is slack, there is a cold perspiration, and the tension of the eyeballs falls.

The pulse gradually loses in volume and becomes rapid and thready.

There is, however, no thirst in pure salt depletion, and the patient may be passing the normal amount of urine if he is drinking water freely.

As he loss of fluid in salt depletion alls upon the extracellular fluid, it follows that there is a reduction in plasma volume.

The haematocrit value of the blood therefore rises, the red cell count and haemoglobin Increase, and the plasma protein level becomes higher.

Clinically, the two states of water depletion and salt depletion are often combined. If a patient who is suffering primarily from salt depletion is unable to retain water owing to vomiting, he will manifest this mixed type of dehydration.

The salt depletion will produce the signs of peripheral circulatory failure, while the water depletion will cause thirst owing to the dryness of the mouth, and the amount of urine passed will be very small.

Studies on dehydration indicate the importance, in all cases of serious illness, of securing an adequate amount of water and of salt for the patient.

Sufficient water must be given to ensure the passage of some 1 litre of urine in the 24 hours, and even more than this amount if there is any renal insufficiency.

To overcome salt depletion at least 5 grammes of sodium chloride must be taken daily in the food; and the amount passed in the urine should be 3-5 grammes per litre. It has been pointed out that severe salt depletion resembles clinically the condition of peripheral circulatory failure.

The syndrome is the same as that of collapse or surgical shock.

It may occur more or less suddenly in pneumonia, peritonitis, coronary thrombosis, acute vascular disorders of the brain, as well as after operations.

Pathologically, this failure of the peripheral circulation is due to a general capillary paresis, and the amount of blood in active circulation is greatly reduced.

Plasma permeates through the capillary walls into the tissue spaces, and the circulating volume of blood is diminished.

The symptom complex which results is in effect one of dehydration, and the treatment is therefore the continuous intravenous saline drip, to which glucose is added, whereby several pints of fluid can be added to the circulation in the course of 24 hours.

It remains to add that the deficiency of potassium from the body also gives rise to serious disorder." - in "The Medical Echo", January 1954.

Normal Saline Solution

"In making up the normal saline solution it is of importance to have the percentage of sodium chloride relatively exact, i.e., 7% to 9%, no more no less.

Ringer, Howell, Loeb and others have shown that **a solution as low as 6%, dissolves the red cells and abstracts salts from the tissues and a solution as high as 10%, causes the cells to shrivel.**

When normal saline solution is to be given continuously for a long time, calcium and potassium chloride should be added, the former acting as a stimulant

to the heart muscle, while the latter is essential for its rythmical contraction and relaxation. In my experimental work I have found the following to be the proper percentage, viz.

Calcium chloride 0.25
Potassium chloride 0.10
Sodium chloride 9.00
Sterilized water 1,000, C.C."

- in "The Old Dominion Journal of Medicine and Surgery", 1909.

Effect of Sodium Iodine Intravenously

"In using sodium iodine intravenously for the purpose of stimulating immunity factors in patients whose history and symptoms suggested the presence of chronic infection, but in whom no focus was apparent, I observed certain clear-cut reactions in such a definite order, in patient after patient, that I was forced to conclude that through the use of this agent a sequential relationship of more than ordinary interest was taking place.

Within 5 or 10 minutes of the injection the patient commonly experienced a sense of relaxation, clear-headedness, well-being and freedom from pain.

In 2 to 4 hours a general reaction commonly appeared, manifested by headache, malaise, and a general 'grippy' feeling.

A local reaction, also, generally developed at this time at sites of foci of infection.

A marked leucocytosis also occurred within 24 hours.

Two days later, with exceptions to be mentioned, the patient felt generally better than before the injection.

Controls, except where quiescent foci were brought to light, showed little or no reaction.

Cases, of hay fever and asthma unexpectedly showed a decrease in an existing leucocytosis, or a leucopenia, where normal counts had prevailed.

Parenthetically, the iodide also undoubtedly exerts an immediate detoxication action on floating blood toxins." - Dr James W. Wiltsie, MD in "Chronic Intestinal Toxemia and its Treatment", 1938.

The Physiological Effects of Injections of Solutions of Salt

"From the Paris correspondent of the Lancet we learn that MM. Dastre and Loye, in a note in the Archives de Physiologic, state that a considerable quantity of a physiological solution of salt may be injected successively into the veins of an animal without causing any apparent trouble, immediate or consecutive.

This quantity has been raised by the experimenters beyond 2/3 of the weight of the animal.

The expression “toxic dose”, the authors remark, has no meaning so far as the salt solution is concerned.

There is no such thing as a toxic dose, but there is a toxic rapidity.

This rapidity is superior to 3°; that is to say, the quantity of the solution introduced does not exceed 3 cubic centimetres per minute and per kilogramme of the animal, in order for the injection to be innocuous certain conditions are necessary, as moderate rapidity of the injection and the amount introduced, and a healthy state of the organs, especially of the kidney.

When these conditions are not fulfilled the animal succumbs sooner or later.

There is then observed a constant exudation which is produced in the serous cavities; also sanguineous suffusions and exudations by the mucous membranes.

When the course of the urinary elimination is observed, one notices, as a general rule, a perfect parallelism between this excretion, on the one hand, and the injection on the other.

After a certain time, the quantity injected is balanced by the quantity which is eliminated.

This normal regimen reveals the existence of a mechanism which regulates the quantity of water of the organism.

This mechanism begins to act when the quantity of salt water injected is equal to the quantity of the blood of the animal before the experiment.

The surplus is immediately rejected.

This quantity, equal to the weight of the blood of the animal, seems to separate in 2 portions: one portion (about 25%, of the weight of the blood) remains in the circulatory apparatus during the whole time of the experiment, and is only eliminated definitely later on; a second portion (about 75%) is retained momentarily in the serous membranes and the tissues, to escape equally later on.

These facts show a physiological connection between the circulatory and serous systems connected with the preservation of the balance of the watery portion of the blood and of the tissues.

Analyses have shown that, when the animal returns to the normal condition, the injection of physiological salt water produced nothing but a “lavage”, properly speaking, or a washing of the blood and of the tissues.” - in “Dietetic and Hygienic Gazette”, Vol.3-4, 1888-9.

Some Facts About Potassium in the Cell

“Potassium is present in every cell of the body. In the frog’s heart its withdrawal from the perfusing Ringer’s solution is followed by a stoppage of the heart after a brief period.

The peripheral vessels may be perfused for hours with Ringer’s solution and functionate normally, but if the potassium is withdrawn, oedema at once appears.

An interesting fact has developed in studying radioactive substances.

Potassium is radioactive, and is the only element of the body that is.

It emits only B rays. It is a point of importance that certain other radioactive substances, rubidium and caesium, may be substituted for potassium in the perfusing Ringer's solution and maintain normal function.

On the other hand, no nonradioactive substance has been found which can take its place; nor can its place be taken by radioactive substances emitting a rays.

Perfusions of the frog's heart have been performed with potassium-free solutions when a substance emitting B rays was within effective distance of the heart.

Potassium is a thousand times weaker than uranium and a billion times weaker than radium in its radioactivity. (Zwaardemaker 1918)

The emanations from potassium are negatively charged electrons which travel through the colloidal aggregates with their content in ions and on account of their velocity, accelerate the rate of migration of gaseous ions in a way similar to ultraviolet light and cause them to become electrical conductors.

On account of their negative charge they distort all systems which are in electric equilibrium through which they pass.

In summer smaller amounts of radioactive substances are needed than in winter, so the relative amount of potassium as compared with calcium is found to be less in summer and greater in winter.

Potassium and sodium increase the permeability of the cell membrane, while calcium decreases it (Burns 1921).

Phosphates in certain structures also fortify the action of calcium which seems to be necessary to sympathetic nerve action.

On the other band, pilocarpine produces stimulation and atropine inhibition of the parasympatbetics; while potassium, magnesium, and sodium all produce parasympathetic action in visceral structures.

A further explanation of the action of calcium in all of these instances is furnished by its action in decreasing the permeability of the cell membrane, hence reducing cell activity.

Based upon these facts, we find a rational method of relieving many disturbing symptoms and syndromes met in disease, a few of which will be enumerated.

Others will readily occur to the observing clinician." - Dr Francis Marion Pottenger, AM, MD, FACP, in "Symptoms of Visceral Disease: A Study of the Vegetative Nervous System", 1944.

Minerals in the Body

"The minerals of the body occur in the form of calcium oxide, inorganic phosphates, lecithins, phosphoproteins.

In the inorganic phosphates phosphorus is present as salts of the mineral bases, calcium, magnesium, potassium and iron. Sodium principally as sodium chloride and to a less extent as sodium phosphate and sodium carbonate.

Potassium is present mostly as salts of mineral acids.

Magnesium usually combines with phosphate forming magnesium phosphate.

Sulphur in combination with proteid bodies. Chlorine is in combination with sodium as sodium chloride.

Iron is in combination with hemaglobin.

In the body the base forming elements are calcium, magnesium, sodium, and potassium. The acid forming elements are phosphorus, chlorine, and sulphur.

Acid mineral elements enter the body in organic combinations as follows: sulphur as a constituent of food-protein.

If sulphur is oxidized it is burned into sulphuric acid and excreted in the urine as inorganic sulphates. Sulphates and phosphates result from protein tissue waste and by oxidation of food protein in the body. These are eliminated from the body as such. Phosphorus enters the body as inorganic phosphates; as salts of various organic acids; as lecithin (compounds of fat), phosphoric acid, and in phosphoproteins and nucleoproteins.

The eliminated phosphorus by way of the urine is in the form of di- and mono-hydrogen phosphates of sodium and potassium and less abundantly in the form of phosphates of calcium and magnesium.

The phosphorus of the faeces is largely in the form of phosphates.

Chlorine enters the body as chlorides and is eliminated by the kidneys almost wholly as chlorides.

To summarize, the mineral bases are calcium, sodium, and potassium which enter the body as salts of various organic and inorganic acids.

These alkali reacting elements are used in the body mostly in combination with phosphoric, sulphuric, hydrochloric and carbonic acids, principally for structural, regulative, and catalytic purposes and are eliminated from the body as in organic salts.

The organic acids of feed stuffs, such as citric, malic, and tartaric acids of fruits, are mostly oxidized in the animal body to carbondioxide and water, in which compounds they are excreted from the body.

There are formed within the body, mineral acids which cannot be eliminated in this way.

These acids must be neutralized in order to protect the animal from a disturbance of conditions essential to the continuance, of vital reactions.

These acids are formed chiefly by cleavage and oxidation of proteids, either of the body or of the feed, the sulphur and phosphorus contained therein, as constituent parts, being oxidized to the corresponding inorganic acids.

These acids are neutralized by carbonates of feed, water, or tissues; by alkalies liberated by the oxidation of organic-acid salts; by ammonia withdrawn from constructive formation or urea; by ammonia from the tissue; or, by ammonia split off from proteids, especially for acid neutralization.

Aid to Tissue Construction

Bone contains calcium in the form of calcium phosphate, carbonate, and fluoride. It contains magnesium in the form of phosphate of magnesium. There is

also present sodium chloride. The fluids of the body contain approximately 0.85% sodium chloride.

Proteid tissue contain sulphur. The hemaglobin of the erythrocytes contain iron. The nucleus of the leucocytes contain phosphorus, as does also prothrombin. The blood also contains considerable amounts of potassium chloride, and sodium carbonate.

Next in abundance are phosphates of calcium, magnesium, and sodium The chief inorganic constituents of the cells being potassium phosphate. In the plasma sodium chloride is the most abundant salt.

Aid to Function

The presence of calcium salt is necessary for muscular contraction, and the control of both voluntary and involuntary muscles is accomplished through the proportion of calcium, magnesium, sodium, and potassium salts acting upon them.

Sodium salts are essential to cardiac relaxation, in fact the heart cannot functionate without the presence of sodium and calcium salts.

The blood cannot coagulate, when drawn, without the presence of calcium salts.

The essential alkalinity of the blood is due to the phosphate and bicarbonate of sodium.

Iron is essential in the red blood corpuscles to give them their oxygen carrying power, 0.4% of the hemaglobin being iron. The nature of the inner stimulus of the heart is intimately connected with certain organic salts of sodium, calcium, and potassium. These are probably in the form of chlorides.

It has been shown that calcium promotes contraction and that sodium and potassium brings about relaxation of the heart.

The sodium carbonate of the blood probably assists in carrying the carbon dioxide to the eliminative organs, the lungs.

Free acid formation in the stomach is probably formed by selective powers possessed by the secretive cells by an interaction of sodium chloride and sodium di-hydrogen phosphate of the blood.

The digestive fluid secreted by the intestinal glands is alkaline due to sodium carbonate.

The pancreatic secretion contains much sodium, magnesium, potassium, and calcium in combination with chloride, carbonate and phosphate.

Bile contains sulphur, phosphate, and chloride of sodium, and salts of calcium, magnesium, iron, and potassium.

The larger proportion of salt is sodium.

The salts of the body perform important functions in connection with secretion and excretion.

They direct the metabolism of the body, though how is little understood.

They regulate the fluid from blood to tissues and vice versa.

Irritability of muscles and nerves is due to salts. Salts assist in the formation of

secretion, repair, and disintegration. Salts are of no value from an energy standpoint.

Their changes are not accompanied by the liberation of heat energy or if so small that it has never been measured. They maintain a normal composition and osmotic pressure. They play an important part in controlling the flow of water to and from the tissues.

They constitute the essential part of living tissues, and are essential to its normal reactions." - Dr Benjamin Franklyn Kaupp, Pathologist in "The Journal of the American Association of Instructors and Investigators", March, 1919.

Therapeutic Mechanisms of Epsom Salts (Magnesium sulfate)

Magnesium sulfates are common minerals in geological environments. Their occurrence is mostly connected with supergene processes. Some of them are also important constituents of evaporitic potassium-magnesium (K-Mg) salts deposits.

> *"In biology, adding phosphates to - and removing them from - proteins in cells are both pivotal in the regulation of metabolic processes. Referred to as phosphorylation and dephosphorylation, respectively, they are important ways that energy is stored and released in living systems." - Wikipedia, 2019.*

"The symptoms of simple alkalinity without crystal formation, either normal in the evening and towards the end of life, or pathological, are: the feeling of being lazy, tired and weak but without pain.

In this case the alkaline phosphates exist in excessive quantity but are still held in solution.

As soon as the solution gets over-concentrated the phosphates crystallize out, and now we get, according to the location where this occurs, the symptoms of one, or the other, or a combination of several of the above-named ailments.

My second reason why I make the phosphates responsible for the crystal formation is this: As all the enumerated troubles start in the muscles, it must be a salt which is prevalent in the muscles and that is what the phosphates are, chiefly the potassium phosphates.

No other salts are in sufficient quantity in the muscles to cause, even in crystalline form, such serious disturbances as we encounter in acute lumbago, angina pectoris, etc." - Dr H. C. Barkman, MD, in "The Crystal Theory of Disease", Medical Guide and Critic, May 1920.

Urine is the Chief Excretion of the Body

"It contains the greater portion of the end-products of protein metabolism and is also the medium in which the accessories of the diet are discharged from the body. The chief end-products of protein metabolism are urea, creatinin, uric acid, and ammonia.

Among the chief excreted accessories are:

a) Inorganic: water, and sodium, potassium, calcium, and magnesium chlorides, sulphates, and phosphates.
b) Organic: non-nutrient constituents of food which serve to give it flavour; drugs.

Examples of this class of excreta are the purin bodies, which represent the excreted alkaloids." - Dr Henry Newell Martin, MD in "The Human Body", 1919.

Magnesium

"Around 1930, lack of magnesium in the diet was found to cause hyperirritability and convulsions in laboratory rats.

Most of the body's magnesium 60–70%, is present in the skeleton, magnesium is second only to potassium in abundance in the soft tissues, which contain 0.1–0.2 g Mg kg−1 fresh weight.

Unlike potassium, however, magnesium is largely 80% protein bound. Magnesium is associated predominantly with the microsomes, where it functions as a catalyst of a wide array of enzymes, facilitating the union of substrate and enzyme by first binding to one or the other." - N. F. Suttle, in "Mineral Nutrition", 2010.

Calcium and Phosphorus

"Calcium and Phosphorus are elements which are widely, but generally independently, distributed in nature; such association as occurs between them arises from the existence of a series of naturally occurring, relatively insoluble calcium phosphate salts. Phosphorus is present in all biological systems, but the presence of calcium is much more variable, and the 2 elements are only closely associated in higher organisms possessing an endoskeleton which derives its rigidity from a solid phase of calcium phosphate.

Animal life arose in the sea, where calcium is the 5th most abundant element (after chlorine, sodium, magnesium, and sulphur) in a concentration of about 40 mg per 100 ml.

The plasma water calcium of some primitive fish is also high (about 20mg per 100ml) though not as high as in the sea.

In fresh water, on the other hand, the calcium concentration is low, and the plasma water calcium concentration of fresh water fish (about 6mg per 100ml) is higher than that of their environment (Urist, 1963).

The evolution of life from salt water on to land and into fresh water has therefore required an adaptation from a high calcium to a low calcium environment, just as it has required adaptation to corresponding changes in environmental sodium.

Unlike sea fish, mammalian vertebrates have actively to maintain an adequate concentration of calcium in the plasma water to permit calcification of the skeleton and to protect the neuromuscular system.

To do this, they draw on their calcium stores if necessary. The result is that in calcium deficiency the plasma calcium is maintained but the skeleton becomes depleted.

The position with regard to phosphorus is rather different. The phosphorus content of sea water is extremely low, generally less than 100 /zg per 100 ml.

The development of life from sea water has therefore involved the progressive accumulation of phosphorus from a phosphorus-poor medium and the final development of a system in which the protection of the body's stores of phosphorus appears to take precedence over the preservation of the inorganic phosphate concentration in the plasma.

Phosphorus deficiency lowers the plasma and urine phosphate but has relatively little effect on the total body phosphorus until x)r unless the deficiency is very severe.

The magnesium concentration in sea water is high (130mg per 100ml) and it is widely distributed in nature, yet the plasma magnesium of animals is relatively low and the total body stores smaller than those of all the other major elements.

Magnesium deficiency is therefore rare, but when it occurs the organism responds by lowering the plasma magnesium concentration rather than by depleting its body stores. In this respect, magnesium resembles phosphorus more than calcium.

Body Composition

Calcium and Phosphorus represent a large proportion of the elementary composition of the human body.

Disregarding the oxygen and hydrogen in the body water, calcium and phosphorus rank 3rd and 4th, respectively, after carbon and nitrogen and represent about 2% and 1% of body weight, respectively." - B. E. C. Nordin, in "Calcium, Phosphate, and Magnesium Metabolism", 1976.

Chapter 50

The Role of Mental and Spiritual Attitudes, and Expectancy

"The mind is its own place, and in itself can make a heaven of hell, a hell of heaven." - John Milton in "Paradise Lost", 1667.

"All mental orders are based upon the favourable or unfavourable report of one or more of the 5 sensory sets of nerves. So we see at once that mentality or the mind of man in all its action has as its foundation for its conclusions the report or reports of one or more of the 5 senses.

If the mind is normal then wise conclusions and judicious orders are issued for the support and comfort of the human body. But suppose we have a break, a diseased, wounded or disabled condition of the motor nerve, then we will have a failure in perfect obedience to the orders of the mental system.

Suppose the nutrient system should fail to nourish any division or the whole body, the result is prostration either of the division or of the whole body.

Any confusion or failure in the whole nerve system or in any division will show imperfection in health, mental or physical action, just in proportion to the shortage, or injuries received." - Dr. A. T. Still, MD, DO in "Osteopathy, Research and Practice", 1910.

"In neglecting the systematic and scientific employment of mental influence in the course of disease, medical practitioners throw aside a weapon for combating it more powerful than all the drugs in the pharmacopoeia." *- Dr. Maurice de Fleury, MD in "Mind and Medicine", 1900.*

"A pure body, governed by a pure mind, is a wonderful combination; it is an expression of godliness in the flesh." *- Dr Eric. F. W. Powell, DO in "Water Treatments", 1929.*

"The framework called the body organized with bone, muscle, and nerve cells is but a mass of degenerating tissue when out of touch with mind, the constituents of which are perception, intellect. will and emotion. We know the mental factor is dynamic in producing disease.

We know, too, the same force operates favourably in producing health.

The blue pill and Epsom salts are noble, Obvious, palpable, physical and chemical remedies. Force and boldness are intangible remedies applicable and operative in the mental realm.

Experience teaches that the laws governing the bodily functions originate in the

realm of the mental. With this fact existing, we may only rise to the possibilities of our profession when we cultivate an acquaintance in the domain of mind, commensurate with our understanding of the physical body." - Dr J. M. Aikin, MD, in "Mental Therapeutics in Medicine", Medical News, 1903.

Nutrition and Exercise plays an important role in health, and these 2 combined can in itself prevent, and or resolve the majority of health conditions in a body, never the less, these may only be achieved, **if the Right Mental Attitude is kept.**

Then in this chapter you must try to understand, that which is, the direct influence, and its relationship, between a healthy mind, upon a healthy body, where by an unhealthy mind will give rise to a unhealthy body.

The Emunctologist must help those in need; to be in Harmony Physically, Mentally, and Spiritually.

Has All Healing must be of a Positive Nature, and the Willingness of the Body Desire for Wellbeing, and Health at its core must be based in the Willingness of the Spirit.

> *"Science and Religion are One when their Purposes are One. Do not doubt the abilities of those influences in the spiritual life to meet the needs of the body physically, mentally, spiritually." - in "The Book of Emmanuel or God among men", Order of Good News.*

Chemistry of the Body as Effected by Adverse or Favourable Emotions Psychology

"The pathologist has collected much data demonstrating the chemical changes that take place In the human body through the darker emotions, such as anger, fear, jealousy, hate.

The secretions of the body that should be normally alkaline in their reaction become acid, and those acid alkaline, due to these untoward mental excitements.

Various secretions of the body, such as the salivary, gastric, the perspiratory, and others of the excretions thereby, modified.

And I think I am safe to say it is within the experience of the average physician to know of the mother's milk becoming poisonous to the child when the mother has had a shock, or been under the influence of this type of emotions.

If a spasm, a wave of wrong emotion change the chemistry of the body and, therefore, the cell substance, it must take a powerful force to so react as to make the body take its equilibrium again, and be just as though no such wave had passed over it.

Again, this is true, that giving way to an irritation once makes it so much easier to yield again that one shock after another is impressed upon the organism, and the vital force never succeeds In adjusting the body after one paroxysm before

another attack comes, and so we have chronic morbidness, or constant irritability (wrong emotional states), compelling tissue changes, and a confirmed pathological state established in the body through mental action.

Wasting diseases, of which tuberculosis is typical, may have their origin in fear, anger, jealousy, or any other inapposite excitement, for these make their most profound Impress upon the portion, organ, or tissue whose standard of resistance is the lowest.

The science of all the above is that something from the outside strikes the mind (objective consciousness), inflames it, and passes to the soul (subconsciousness) that presides over all the functions and forces of the body, and is controllable by suggestion, an inflaming suggestion, and under that suggestion it acts, changing the chemistry to abnormal, because it is influenced in an unnatural way, and, as in anger, often causes violent resistance, with a much increased power, because the soul brings the involuntary systems to its use.

That is why one strikes with a blow so powerful and harder than he is conscious of, when he is mad.

He uses his voluntary, but his involuntary muscular system as well, and so it is we do such marvellous physical feats under excitement.

If, under the impress of these unwholesome emotions, such adverse chemistry is produced, why do we not, when we find disease and wrong chemistry appeal to the seat of the emotions, the soul, and put there the most beautiful pictures of health, happiness, joy end peace, great expectancy of uplift, forgetting morbidity and depression until the whole being is filled and thrilled with the glad emotions?

Talk to the soul, and get the right expectancy there, for a man becomes from his head to his feet, from his skin to his marrow, the expression of that which his soul believes, and the thought he lives will become expressed in the contour and composition of his physical organism.

If health is to abound It will be through outward expression of an inward consciousness. Love, hope, faith, and all joyful emotions must be enthroned, and no place left for the evil, and the chemistry of the body will stay normal.

Every passion has its characteristic chemistry. If it he a spiritual passion, that is, a passion that issues from within, there is health in it.

If it be a negative passion that has its beginning In the sensual nature, there is disease in it.

In the discussion of chemistry and psychology there is no more striking illustration of how thought changes the chemistry and magnetism than in what passes for a love affair of the average sort.

A lady and gentleman meet and when they look into each other's eyes, or clasp each other's hands, there is an exchange of some mysterious kind that is pleasurable and so noticeable that one or the other, or maybe both, observe the more than ordinary attraction between them.

They get into each other's company and find, with ripening acquaintance, the growing intensity of attraction, and they begin to think and assert that they undoubtedly are intended for each other.

Our lovers meet that way and experience an electric discharge, just like that which takes place when my patient sits under the head breeze of my static electric machine, when you see the spark jump from her head to the brass electrode and, no doubt, there is the same bright spark and a keen snap takes place when these lovers touch, as described, and I wonder if that is why love-making has been called "sparking", and was so named by an inspired individual, who spoke better than he knew?

The courtship is started, and the suggestion exchanged that they must have each other, for it is a fixed, divine decree that they must answer.

They have emotions and so begin changing the chemistry of each other's bodies, placing in every cell of their bodies a chemistry that can only be answered by contact each with the other.

The violent rushing together of hydrogen and oxygen is no comparison with the resistless demand that these respective chemicals make for satisfaction in each other.

After all this wild physical attraction is awakened it is too late to consider anything as to their mental and spiritual fitness, or equality of birth, or heredity, in any of its possibilities.

They have accepted the one suggestion that they were created for each other, and that fixes it all for them.

They marry and under their more intimate and constant association the laws of chemistry and magnetism are satisfied, and, just as in putting a demagnetized piece of iron in touch with a magnet, the 2 pieces become of like magnetism, and they fall apart and are repelled by each other.

Or, like the coming together of the hydrogen and oxygen, there is the production of the quiet, satisfied body of water.

Now, the individuals knowing nothing of the basis of their union, and supposing they would always experience the same wild thrill as during courtship, find there is no such thing.

They do not want to be like the calm body of water, that looks too dead, and they do not like to admit that they repel each other like the 2 magnets of like polarization, but one or the other will first suggest, "love is dead, or you love some one else, for your kisses do not thrill like they used to."

Of course, if they knew the basis of their union was physical and, therefore, due to magnetism and chemistry, and did they know that the 2 gases could be separated that comprise the water and they would want to rush together again, or that the metals that had been magnetized alike would again be demagnetized so their polarity would attract again, and from that reasoning know that they could be in touch less, and soon feel the same attraction that bedimmed their reasons in courtship days, they would adopt that method rather than proceed at once to living disgruntled lives, or resort to divorce court.

Physicians, we should be teaching these things, for no one else knows how, but we should go beyond this physical matter, and be able to teach what the pulpit, nor the college professor is doing, that all such love affairs as the above, although

constituting probably 99%, are abnormal, for the union is based upon an emotion that had its origin outside of the individual, or, at least, appealed to his sensual nature first.

Teach that there is such a thing as love, but it has its nativity in the soul, and if persons are to be truly married this soul attraction must have precedence, and its promptings must be known before the sensual nature is aroused, and the wrong suggestion fastened upon the souls.

The soul presides over the body and, therefore, a marriage based upon spiritual fitness will bring out all the possibilities of the physical in the most intense manner.

Education that involves the instruction that there is a soul affinity from which all good will issue, but that there is a physical, or sensual, which, if it have the initiatory, will ruin every hope, is, as a preventive measure, as important.

It is the feeling that every couple has that no one but his or her particular mate could be so wildly attractive is the source of the most missteps.

Teach the youth that there is no novelty in it, but that it is by law of the most common force in the world that they are attracted, and that even a cat enjoys being smoothed, and is attracted to him by the same law that he thinks makes him and his companion the exclusive affinities, and he will analyze his situation and may be will look out for that companionable one who appeals to his soul first, and may never effect his sensual nature at all, or if so, the soul will be master and sensuality and hence repulsion will not result from the union.

"The Psychology and Chemistry and Magnetism of Love", is a subject worthy

of our careful attention. Psychology has a larger field than suggestive therapeutics and hypnotism.

Let our capable men continue to write upon these matters." - Dr A. A. Lindsay, MD, Principal St. Louis College of Suggestion, in "The Medical Brief", July 1905.

"Next to the law of life and health, we must consider the law of happiness."

Action of Such States as Anger, Fear, and Pain Upon the Motility and Secretory Activity of the Intestinal Tract

"The effect of such emotional states as anger, fear, and pain upon the process of digestion has long been known to subject has been given careful physiologists and clinicians. The study by Cannon and his co-workers.

They have shown how these various emotional states, acting through the sympathetic centers in the diencephalon, spread their effects throughout the entire body, and in the intestinal tract inhibit both motility and secretory activity. All clinicians meet this action in their everyday practice.

Endocrine Glands

Whenever there is a marked disturbance in the equilibrium of the endocrine system, this reacts upon the vegetative nerves and may produce effects in the gastrointestinal system, now of one type, now another." - Dr Francis Marion Pottenger, AM, MD, FACP, in "Symptoms of Visceral Disease: A Study of the Vegetative Nervous System", 1944.

The Mechanism of Emotional Disturbance of Bodily Functions

"In 1896, when I was a first-year medical student, Professor Henry P. Bowditch, invited me to study of the activities of the alimentary canal.

In December of that year we demonstrated to the members of the American Physiological Society the passage down the esophagus of a swallowed mass.

After that, we studied the mechanical functions of the stomach and intestines, and the various conditions affecting the rate of passage of food through the digestive tract.

Almost from the start of these investigations an outstanding fact appeared. The smooth running recurrent waves of peristalsis coursing over the stomach, and the rapidly shifting segmentation of the food masses in the small intestine were promptly abolished whenever the subject showed signs of anxiety, distress or rage.

It was evident that these alimentary functions were extremely sensitive to emotional disturbances.

My interest in effects of excitement, led to studies of the services of the sympathetic nervous system, by itself and in cooperation with glands of internal secretion, and that in turn to an examination of the parts of the central nervous system which govern these fundamental reactions of the organism.

It has seemed to me, therefore, that we might profitably consider together the ways in which strong emotional states may endanger bodily welfare.

Indeed, very pronounced and disastrous consequences may result in the

organism because of habit reactions, which may be regarded as not different in quality from any of our ordinary ways of behaving.

Also as a physiologist I have the reasonable right to regard suddenly altered functions of organs innervated from the central nervous system as occurring in consequence of nerve impulses discharged from that system.

Using the physiological point of view, therefore, I propose to consider emotions in terms of nerve impulses, much as I might consider the nerve impulses from the "motor area" of the cerebral cortex as they govern the movements of skeletal muscles.

Although I shall use words with psychological implications, such as "fear", "rage", "feelings", and others, let me state at the outset that I use them solely as convenient short terms for complex activities in the brain.

I shall be discussing, throughout, the physiological aspects of emotional excitement - the nervous mechanisms which are operating.

The cardiovascular system, like the digestive system, is under the influence of the sympathetic nerves, but instead of being depressed or inhibited, it is stimulated by them.

The excitement which stops gastric digestion makes the heart beat more rapidly and raises blood pressure by contracting the blood vessels. During the War there appeared not infrequently cases of "disorderly action of the heart" or, as it was sometimes called, "soldier's heart".

The slightest excitement or perturbation would send the pulse bounding at a high rate (130 to 150 beats per minute).

The general physical and nervous condition of the victims of this disturbance - their anxious faces, their troubled eyes, the drawn lines about the mouth, their trembling - was such as to make reasonable the view that the stresses of the war had become intolerable and had resulted in such sensitizing of the sympathetic control of the heart that even mild stimulation produced extreme effects.

The mechanism by which emotion may bring about such sensitizing is illustrated in a case reported by Foster:

> *"A wife, who was free from any cardiac disorder, saw her husband walking arm in arm with a strange woman and acting in such a way as to rouse jealousy and suspicion. Profoundly stirred by the incident the wife hastened home and remained there several days. She then began to fear going out lest she might meet her husband with her rival. After days of wretchedness she was persuaded by a friend to venture forth, "probably in a state of abject terror", as Foster remarks, but she had not gone far when she ran back to her home. Then she noted that her heart was thumping hard, that she had a sense of oppression in her chest and a choking sensation. Later attempts to go outdoors produced the same alarming symptoms. She began to feel that she might die on the street if she went out. There was no organic disease of the heart, and yet slight effort as she moved from her home brought on acute distress." - Dr Foster, MD, in "Journ. Am. Med. Assn.", 1927.*

The influence of excitement on arterial blood pressure may also be noted.

The pressure is produced by the energy of the inflow of blood into the arteries and the resistance to the outflow from them.

The sympathetic impulses, by speeding the heart rate and constricting the arterioles, raise the pressure by affecting positively both factors.

There is evidence that violent emotional disturbance can produce profound effects on the organism through influences on the thyroid gland.

Emerson has reported some striking instances of hyperthyroidism which followed intensely affective scenes in the lives of the patients:

"Case 1. - Married woman who had had 2 illegitimate children and whose husband committed suicide in her presence as a rebuke to her manner of living. Thereupon she dropped to the floor and exhausted herself in shrieking. At once she had a sense of constriction of her throat and was troubled with difficulty in swallowing; the thyroid gland enlarged and 6 weeks after the incident she had a metabolism 65%, above normal. Later troubles of an exacting character were associated with the development of high blood sugar and a high arterial pressure.

Case 2. - Man of 20 years had a quarrel with his fiancée. She, pretending to commit suicide, had in his presence swallowed some pills and fallen down screaming. The man departed hastily. Within a week he was suffering from swelling of the neck and nervousness. When he appeared at the hospital 4 months later he had lost weight, he presented a large goitre over which a definite thrill could be felt, and his basal metabolism was up 24%, above the normal level.

Case 3. - Married woman who had seen her husband kill his 2 brothers. The husband bitterly reproached her for not coming to his defence at the trial. A week after the trial a goitre became evident and reached a large size in 7 days. When she came to the hospital a few months later, the goitre was huge, it pulsated visibly, had a palpable thrill and was causing an oppressive sense of suffocation. There was pronounced exophthalmus with marked tremor and restlessness. The basal metabolism varied from +40% to +117%." - Dr Emerson, MD, in "Trans. Assn. Am. Phys.", 1927.

In the foregoing discussion I have purposely emphasized the physiological mechanisms of emotional disturbances, and for 2 main reasons:

1. I wished to show that these remarkable perturbations could be described in terms of neurone processes.

2. I wished to persuade you that these interesting phenomena should not be set aside as mystical events occurring in the realm of the "psyche", but rather should be regarded as movements and inhibitions and disturbances in the body.

There are physiological implications which have practical bearings on the care of patients who have been or are being profoundly disturbed by emotional experience.

Thus habitual emotional expressions, both in the facies and in the viscera, may become fixed and deep-set in the neural organization. Along with profound emotional disturbance there will be discovered a demonstrable lesion.

The 2 conditions, the altered structure of some organ and the altered function of the nervous system, may be causally related, and may have to be treated as a single disorder.

Certain it is that only when they are both regarded as the perturbations of a single unity, the organism, will they be properly conceived and effectively treated. I have tried to indicate the ways in which the functions of the body may be upset by the neural processes which are associated with emotions." - Dr W. B. Cannon, MD, in "The New England Journal of Medicine", 14 June 1928.

The Role of the Mental and the Spiritual Aspects of Men

Through Thoughts, Attitudes and Emotions And its Effects on Physical and Mental Health

"Life is eternal. Life enters the finest of flesh of man, it carries constructing wisdom and ability. It begins with the atoms of flesh, adds by ones to countless millions. Carefully adjusts each to suit the form of the design and specification, to make a physical habitation, to suit the union of mind and matter. Thus we see the form of material man. All parts fit to suit all others."- Dr Andrew Taylor Still, MD, DO "The Philosophy and Mechanical Principles of Osteopathy" 1902.

"What we think of as "mind" is so intimately associated with what we call "body" that we are coming to realize that the one cannot be understood without the other.

Every thought reverberates through the body, and, on the other hand, alterations in our physical condition affect our whole attitude of mind." - James Harvey Robinson in "The Mind in Making", 1921.

Attitude

"In order to treat any disease it is of first importance to win the patient's confidence." - Dr Theodore Franklin Bach, MD, in "The American Journal of Nursing", Vol. XXXII, June 1932.

No, climatic conditions will not change the body, unless ye change in mind. These are very well, but what ye need is a change of mental attitude. If healing is to come, the individual must Keep a constructive influence, not merely for self, but for its relationships to others.

The Lysozyme Secretion of the Human Colon is Increased During Violent Emotions

"The so-called functional disorders of the gastrointestinal tract are disturbances in motility, secretion and sensation of this tract caused by dysfunction of the vegetative nervous system in its various ramifications.

Such disorders may be due to a number of causes among which psychological factors are common and important.

The diencephalon probably plays a major role in the conversion of psychic disturbance into gastrointestinal manifestations by reason of its being a centre for several related functions.

In the psychotic reactions, gastrointestinal symptoms are common.

Early, especially in schizophrenia and involution melancholia, the gastrointestinal manifestations may mask the fundamental disease process. Mild psychotic reactions, especially depressions, may go unrecognised by reason of the preponderance of the gastrointestinal symptoms.

The treatment should be directed to the underlying psychotic condition. In the psychoneuroses and neuroses the gastrointestinal manifestations may be the conspicuous manifestations of the total neurosis.

To treat these cases the physician must have a minimal knowledge of psychopathology with some formulations regarding the structure of personality, various types of reactions, the nature of anxiety and its various modifications, and learn to understand his patient in terms of symbolizations and tensions.

He must be prepared to devote considerable time to enable him to have a clear formulation of the problems of the individual patient.

The success of treatment, in the majority of cases, depends upon some

evaluation of the underlying psychopathology and a thorough knowledge of a few therapeutic procedures applicable to most psychoneuroses and neuroses and special procedures in the treatment of some types of neuroses and symptoms." - Dr Joseph C. Yaskin, MD in "The Treatment of Functional Gastrointestinal Disturbances of Neuropsychiatry Origin", Annals of Internal Medicine, 1 June 1943, and in "Clinics", 1942.

W. J. Grace, in "Life Situations, Emotions and Chronic Ulcerative Colitis", Proceedings of the Association for Research in Nervous and Mental Diseases, 1950:

1. In these fistulous subjects the colon was found to participate in reactions to stressful life situations. Although in all of the four subjects colonic functions were of the same order, the two subjects who had ulcerative colitis were found to display more frequent and more sustained changes in colonic function than did the other subjects whose colons were free of such diseases.

2. Overwhelming life situations provocative of abject fear and dejection were associated with hypofunction of most of the large intestine with pailor, relaxation, lack of contractile activity and relatively low concentrations of lysozyme in the colonic secretions.

3. Life situations provocative of conflict with feelings of anger, resentment and hostility or of anxiety and apprehension were found to be associated with hyperfunction of the colon, manifested by increased rhythmic contractile activity and ultimately by intense and frequent waves in the caecum and ascending colon and replacement of rhythmic activity on the left by sustained contraction of longitudinal muscles with shortening and narrowing of the colonic lumen, and hypersecretion of the enzyme lysozyme.

W. J. Grace, in "Life Stress and Regional Enteritis", Gastroenterology, 1953:

Four patients with proven regional enteritis were studied. In each the onset of the illness and each exacerbation coincided with periods of stressful life situations.

The patients reacted to the stressful situations with an attitude characterized by feelings of "getting it over with" or "getting rid of it."

Grace, W. J. in "Life Stress and Chronic Ulcerative Colitis", Annals of the New York Academy of Sciences, 1954:

1. Feeling states, characterized by anger and resentment, are associated with hyperfunction of the colon. This hyperfunction of the colon is manifested by hyperemia, engorgement, hypermotility, hypersecretion of mucus, and of the enzyme lysozyme.
2. Hyperfunction of the colon results in increased fragility of the colonic mucosa.
3. The colon, during periods of anger and resentment, resembles the colon after the administration of mecolyln (methacholine chloride).
4. Sustained feelings of anger and resentment associated with sustained hyperfunction of the colon result in submucosal bleeding and ulceration.

W. J. Grace, C. W. Holman, S. Wolf, H. G. Wolff, in "The Effect of Vagotomy on the Human Colon", Gastroenterology, 1949:

> *"On days of anger, resentment and hostility, lysozyme concentration of 62, 62.5, and 83 units per cc. were found, while on days of relative calm, security, relaxation and good spirits, values of 11.4, 10.3, and 19 units per cc. were obtained."*

H. G. Wolff, W. J. Grace, S. Wolf, in "Life Situations, Emotions, and the Large Bowel", Transactions of the Association of American Physicians, 1949:

The data adduced from the study allowed of the following inferences.

1. **In 4 fistulous subjects, the colon was found to participate in reactions to stressful situations.** The subjects with ulcerative colitis were found to display more frequent and sustained changes in colonic function than did the subjects whose colons were apparently free of disease.

2. The "gastrocolic reflex" appears to be a conditioned response rather than a simple neural reflex.

3. Stressful life situations provocative of conflict, anger, resentment and hostility or anxiety and apprehension were found to be associated with hyperfunction of the colon manifested by hyperemia, hypermotility and increased secretion of the enzyme, lysozyme.

4. Overwhelming situations provocative of abject fear and dejection were associated with hypofunction of the large intestine with pallor, relaxation, lack of contractile activity and relatively low concentration of lysozyme in the colonic secretion.

"Cannon (1911) found that any sign of rage, distress or mere anxiety in a cat was accompanied by a cessation of peristaltic movements in the stomach and intestine.

He said also that many emotional states are undoubtedly strong stimuli to peristalsis.

Thomas (1949) points out the domination of the autonomic system by the hypothalamus and the intimate functional relation between hypothalamus and neocortex.

Dr Joseph C. Yaskin, MD writes:

> *"The principal relay station for emotional components of diseases appears to be in the diencephalon. It is responsible for the correlation of psychic and somatic disorders, has a regulating influence upon both of the major divisions of the vegetative nervous system and indirectly upon most of the endocrine glands, upon metabolism and heat regulation". - in "Treatment of Functional Gastrointestinal Disturbances of Neuropsychiatric Origin", Annals of Internal Medicine, 1943.*

Grace, Wolf and Wolff found in 1950-51 on fistulous subjects that the colon participated in reactions to stressful situations.

They found that:

> *"Overwhelming situations provocative of abject fear and dejection were associated with hypofunction of the large intestine with pallor, relaxation, lack of contractile activity and relatively low concentration of lysozyme in the colonic secretion. Stressful life situations provocative of conflict, anger, resentment and hostility or anxiety and apprehension were found to be associated with hyperfunction of the colon manifested by hyperemia, hypermotility and increased secretion of the enzyme, lysozyme."*

- "The Physiology and Pathology of Exposure to Stress; a Treatise Based on the Concepts of the General-adaptation-syndrome and the Diseases of Adaptation: Annual report on stress", 1951, and in "Acta Pædiatrica", 1952.

The Role of the Vegetative Nervous System

"**The common denominator of all disorders of the gastrointestinal tract, either organic or functional, is the physiological disturbances in the various functions of the vegetative nervous system.**

The vegetative nervous system is the "great common path" in the various motor secretory and sensory disturbances of this tract.

For practical purposes, the vegetative apparatus may be divided into 3 parts:

1. The autonomous structures comprised by the myenteric plexus of Auerbach and the submucous plexus of Meissner which, though autonomous, are markedly influenced by the 2 major divisions of the Vegetative Nervous System.

2. The 2 major divisions of the Nervous System:

I. Sympathetic System (**Thoracolumbar System**)
II. Parasympathetic System (**Craniosacral System**)

It is important to stress that both of these systems contain both efferent and afferent pathways.

3. The suprasegmental connections, also a 2 way system of which the diencephalon is probably the most important constituent .

Experimental and clinical evidence suggests that the diencephalon plays a major role in regulating efferent impulses of both divisions of the Vegetative nervous system.

It is worth stressing that the diencephalon now is recognised as having a marked influence upon the endocrine glands, metabolism and heat regulation, as well as receiving impulses from and sending them to the old and new brain and the neuraxis.

Even more important is the fact that the region of the diencephalon is regarded as one of the major centers of emotions." - Dr Joseph C. Yaskin, MD, in "Treatment of Functional Gastrointestinal Disturbances of Neuropsychiatric Origin", Annals of Internal Medicine, 1943.

Diencephalon

The diencephalon acts as a primary relay and processing centre for sensory information and autonomic control.

> *"The diencephalon connects the midbrain to the forebrain. It is located deep within the brain and comprises the epithalamus, thalamus, subthalamus and hypothalamus. The epithalamus forms the roof of the diencephalon and consists of the pineal gland (an endocrine gland involved in circadian rhythms and the onset of puberty) and the habenular nuclei, whose functions are associated with the limbic system, as it connects to the septal nuclei via a tract called the stria terminalis thalami." - Adina Michael-Titus, in "The Nervous System", 2010.*

Attitude and Associated Bodily Changes

"**There is no question that cell metabolism is altered in emotional upsets. We have all seen marked physical changes occur in individuals who have had their minds seriously disturbed.**

In extreme cases, prolonged emotional strain may cause loss of appetite, diminished food intake and loss in weight.

This results in improper vitamin absorption, which in turn leads to hormone dyscrasia and finally nutritional imbalance.

Recognition of this chain of events is extremely important to the practitioner, as far too many patients have been called neurotic and no steady attempt was made to help them." - B. F. Sieve, in "Vitamins and Hormones in Nutrition: V. Emotional Upset and Trauma", American Journal of Digest. Dis., 1949.

> *"The relation of feeding and of psychic stimulation to psychoanalytic study of a variety of patients reveals that the colonic and rectal hypo and hyper-activity could be correlated most accurately with changes in the patient's unconscious oral-intaking tensions (drives). Thus mobilization of the strong oral incorporative strivings (which are expressed physiologically by vagal hypertonus) were accompanied by constipation, and a sudden decrease in such strivings regularly resulted in diarrhoea. Thus changes in function of the large intestine seem to constitute the remote physical sequelae of certain changes in the upper parts of the digestive tract." - T. S. Szasz, "Physiological and Psychodynamic Mechanisms in Constipation and Diarrhea", Psychosom. Med, 1951.*

Dr Thomas P. Almy, MD in "Alterations in Colonic Function in Man Under Stress: II. Experimental production of sigmoid spasm in healthy persons", Gastroenterology, April 1949, report a study of alterations in colonic function in

men under stress, and on the basis of observations of 18 subjects (8 with diarrhoea alone, 7 with constipation alone, and 3 with alternating constipation and diarrhoea).

"Hypomotility of the sigmoid colon may occur in patients with irritable colon as an accompaniment of emotional tension in a general bodily reaction to stress. This phenomenon may be part of the mechanism of functional diarrhoea. The alternation of constipation and diarrhoea in persons under stress is in many cases related to changes in their prevailing moods and attitudes".

Conclude:

"Hypomotility of the sigmoid colon may occur in patients with irritable colon as an accompaniment of emotional tension in a general bodily reaction to stress. This phenomenon may be part of the mechanism of functional diarrhea. The alternation of constipation and diarrhea in persons under stress is in many cases related to changes in their prevailing moods and attitudes."

"In 39 patients with spastic constipation or colonic pain, the motility of the sigmoid colon was studied by proctoscopy or by inlying balloons. When subjected to cold pain, painful compression of the head, or the discussion of life situations productive of emotional conflict, these patients often exhibited markedly increased motility of the colon. This change was associated with obvious changes in speech or in behaviour indicating that the patient was under stress. These results are similar to those earlier obtained with persons who had no clinical disorder of the colon." - Dr Thomas P. Almy, MD in "Alterations in Colonic Function in Man Under Stress: III. Experimental Production of Sigmoid Spasm in Patients with Spastic Constipation", March 1949.

"In 18 patients with irritable colon undergoing kymographic studies of sigmoid motility, a sudden and marked reduction in tone and wavelike motility occurred for periods of 1 to 37 minutes. This pattern was associated with a change in the mood of the subject to one of personal inadequacy, self-reproach, and hopelessness. On 11 occasions in 6 subjects, the pattern coincided exactly with periods of weeping. In one instance studied with tandem balloons, the pattern was observed only in the distal segment. Clinical and experimental evidence is presented, suggesting a link between this phenomenon and the bodily mechanism of diarrhea." - Dr Thomas P. Almy, MD in "Alterations in Colonic Function in Man Under Stress: IV: Hypomotility of the Sigmoid Colon, and its Relationship to the Mechanism of Functional Diarrhea", May 1950.

S. Wolf in "Human Stomach Reacts to Stress Following two Patterns", AMA, Sci. News Letter, 1951, describes the human stomach as following 2 patterns of reaction to Emotional and Psychological stress:

1. Riddance Pattern, with digestion stopping, nausea, and vomiting.
2. Excessive Function, as though just about to be fed; this has 2 dangers:

a) Lowering of the pain response so that danger may not be noted;
b) Increased fragility of the lining, which paves the way for erosion and ulcer.

"All patients with the same symptom-complex described their attitudes toward the situation which precipitated it in essentially the same way. Duodenal ulcer (9 patients) occurred when an individual was seeking revenge.

He wished to injure the person or thing that had injured him. Typical statements were: "I wanted revenge." "He hurt me so I wanted to hurt him."

Attitude can be considered as a description of the function of the physiological process with which it is associated.

The formulation previously made by W. B. Cannon in "Bodily Changes in Pain, Hunger, Fear and Rage", 1929, and H. G. Wolff in "Protective reaction patterns and disease", Ann. Int. Med. 1947:

1. Vasodilatation is the reaction of the skin to trauma. Whealing occurs when vasodilatation is intense. The patient with urticaria feels that he is receiving a blow, and that there is nothing he can do about it (D. T. Graham, in "The pathogenesis of hives", A. Res. Nerv. & Ment. Dis., Proc. 1950).

2. Cold skin is the result of cutaneous vasoconstriction (Brobeck, J. R. "Regulation of Energy Exchange", A Textbook of Physiology 1949). Its occurrence in the individual who is contemplating some kind of action probably represents the functioning of a mechanism to raise body temperature by reducing heat loss.

That an elevated body temperature is desirable for the active organism is suggested by the fact that the elevation occurs to the same extent with a standard amount of exercise whether heat loss is experimentally facilitated or interfered with (Nielsen, Die Regulation der Korpertemperature bei Muskelarbeit. Skandinav. Arch, f. Physiol. 1948).

3. The reaction of the respiratory mucous membrane to a noxious agent is to exclude it by swelling of the membrane with consequent narrowing of the passageway, and to dilute it and wash it out by hypersecretion (Jacobson). When these changes are limited to the nose, the reaction is called vasomotor rhinitis; when they are sufficiently intense to include the bronchi, so that wheezing occurs, the name "asthma" is applied.

4. Constipation is a phenomenon of holding on without change. This corresponds to the patients' attitudes of trying to continue with things as they are, without hope of immediate improvement, or definite desire to do anything different (W. J. Grace, S. Wolf, H. G. Wolff, in "The Human Colon", 1951).

5. Duodenal ulcer is probably the endresult of protracted gastric hyperfunction. It has been suggested that such hyperfunction is part of the preparation for eating (S. Wolf, H. G. Wolff, in "Human Gastric Function", 1947). Directing aggression into the particular channel of eating seems to make sense biologically. An individual with duodenal ulcer desires revenge; that is, he wishes to hurt the person who hurt him.

6. The backache which accompanies the desire of the individual to walk out of his situation is probably consequent to the tension of the lumbar muscles.

The latter fix the spinal column in preparation for locomotion (A. Steindler in "Mechanics of Normal and Pathological Locomotion", 1935). It has been shown that thinking about lifting a weight is associated with increased electrical activity in the appropriate muscles (E. Jacobson in "Electrophysiology of mental activities", American Journal of Psychology, 1932).

The person who gets symptoms severe enough to make him a patient simply feels a particular way very intensely and for a long time. Different attitudes lead to different kinds of overt behaviour, one would predict some correlation between personality traits and diseases. Individual consistency in attitude seems also to be of importance in keeping disease processes active." - Dr William J. Grace, MD, David T. Graham, MD in "Relationship of Specific Attitudes and Emotions to Certain Bodily Diseases", Psychosomatic Medicine, July 1952.

Expectancy

The Place and Importance of Expectancy in Healing

The effect of the mind and that of expectancy in one being healed, wanting to be healed, has God does not Heal those who don't wish to be Healed. Another important concept, Truth to be known by the Emunctologist is that: The individual who seeks Health and Healing, when face to face with the Emunctologist for treatment should not be surrounded by those who are in doubt, or cast out doubt, those who do not expect, those who emanate negative energy in the form of thought form energy.

Here we give an example, which illustrates this Truth, this Universal Law.

From the Gospel of Our Lord, and Saviour has told in Mark 5:35-42:

"While he yet spake, there came from the ruler of the synagogue's house certain which said, Thy daughter is dead: why troublest thou the Master any further? As soon as Jesus

heard the word that was spoken, he saith unto the ruler of the synagogue, Be not afraid, only believe. And he suffered no man to follow him, save Peter, and James, and John the brother of James. And he cometh to the house of the ruler of the synagogue, and seeth the tumult, and them that wept and wailed greatly. And when he was come in, he saith unto them, Why make ye this ado, and weep? the damsel is not dead, but sleepeth. And they laughed him to scorn. But when he had put them all out, he taketh the father and the mother of the damsel, and them that were with him, and entereth in where the damsel was lying. And he took the damsel by the hand, and said unto her: Damsel, I say unto thee, arise. And straightway the damsel arose, and walked. And they were astonished with a great astonishment." - Mark 5:35-42

Know in whom you believe and in what you believe in, this is the foundation of everything in front of your. Build not a beautiful house upon crumbling foundations.

Know where the truth is and build upon same, has truth and that which is from God Eternal.

And to be sure, and not a doubt be God is called Christ. Healing of the physical without the change in the mental and spiritual aspects brings little real help to the individuals in the end.

Be faithful, be patient, keep in the attitude of expectancy. Do not make the applications as rote, but rather with the expectancy and the knowledge that with the applications is coming relief from the source of All supply, God.

Meditation

The nerve system runs from the toes to the crown of the head.

Thus meditating bring that quietness (peacefulness) to the whole nerve forces,

Quiet, meditation, brings strength to the physical body. Considering that the nervous system is the strength of life itself.

What is the Anatomical Structure of the Body

No two are alike. Do you ever find two blades of grass alike? Ever find two leaves on a tree alike? No. But all are the handiwork of God. So, with individual souls, with their complexities of activity. And each soul must know itself to be itself and yet one with God. That's Christianity!

Mind

"Psychotherapy which aims at healing the body through the mind plays a large though often unrecognised part, in all successful treatment; 9 in 10, indeed, of purely medical treatment consists of it. Suggestion in this sense cannot be taught; it is part of a man's personality, a kind of virtue which goes out from him in dealing with disease." - Dr Robert Hutchison

Organ Language

"We may use illustrations of how the emotions influence the functions of our body in order to show them that their emotions may be responsible for symptoms." - Dr Edward Weiss, MD, in "Emotional Factors in Cardiovascular Disease", 1951.

Effect of Thought on Health and the Body

"**The body is the servant of the mind.**

It obeys the operations of the mind, whether they be deliberately chosen or automatically expressed.

At the bidding of unlawful thoughts the body sinks rapidly into disease and decay; at the command of glad and beautiful thoughts it becomes clothed with youthfulness and beauty.

Disease and health, like circumstances, are rooted in thought.

Sickly thoughts will express themselves through a sickly body.

Thoughts of fear have been known, to kill a man as speedily as a bullet, and they are continually killing thousands of people just as surely though less rapidly.

The people who live in fear of disease are the people who get it.

Anxiety quickly demoralizes the whole body, and lays it open to the entrance of disease; while impure thoughts, even if not physically indulged, will soon shatter the nervous system.

Strong, pure, and happy thoughts build up the body in vigour and grace.

The body is a delicate, and mouldable instrument, which responds readily to the thoughts by which it is impressed, and habits of thought will produce their own effects, good or bad, upon it.

Men will continue to have impure and poisoned blood so long as they propagate unclean thoughts.

Out of a clean heart, comes a clean life and a clean body.

Out of a defiled mind proceeds a defiled life and corrupt body.

Thought is the fount of action, life and manifestation; make the fountain pure, and all will be pure.

Change of Diet will not help a man who will not change his Thoughts

When a man makes his thoughts pure, he no longer desires impure food. If you would perfect your body, guard your mind. If you would renew your body, beautify your mind. Thoughts of malice, envy, disappointment, despondency, rob the body of its health and grace.

A sour face does not come by chance; it is made by sour thoughts. Wrinkles that mar are drawn by folly, passion, pride.

I know a woman of 96 who has the bright, innocent face of a girl. I know a man well under middle age, whose face is drawn into inharmonious contours.

The one is the result of a sweet and sunny disposition; the other is the outcome of passion and discontent.

As you cannot have a sweet and wholesome abode unless you admit the air and sunshine freely into your rooms, so a strong body and a bright, happy, or serene countenance can only result from the free admittance into the mind of thoughts of joy and good will and serenity.

On the faces of the aged there are wrinkles made by sympathy; others by strong and pure thoughts; and others are carved by passion: who cannot distinguish them?

With those who have lived righteously, age is calm, peaceful, and softly mellowed, like the setting sun. I have recently seen a philosopher on his deathbed. He was not old except in years.

He died as sweetly and peacefully as he had lived. There is no physician like cheerful thought for dissipating the ills of the body; there is no comforter to compare with goodwill for dispersing the shadows of grief and sorrow.

To live continually in thoughts of ill-will, cynicism, suspicion, and envy, is to be confined in a self-made prison-hole.

But to think well of all, to be cheerful with all, and to patiently learn to find the good in all, such unselfish thoughts are the very portals of heaven; and to dwell day by day in thoughts of peace toward every creature, will bring abounding peace to their possessor." - James Allen, in "As a Man Thinketh", 1903.

As a Man Thinketh

As a man thinketh in his heart, So Is He. Not the other fellow, He. Keep an even, normal balance in diet of body, diet of mind, and the use and associations of same in every way; for as a man thinketh in his heart (not as he speaks, but as he thinketh in his heart) so is he. So, keep the body fit,

keep the mind fit. Do not allow little antagonisms of body Or mind to undo that thou hast builded in thine experience.

For, true is it indeed that as a man thinketh in his heart so do the fruits of his dealings with his fellow man show forth what have been the thoughts of the soul of that man.

For, as the Mind is the Builder, or "As a man thinketh so is he", so does that mind, that body, that soul, expand to meet the needs of same. And in the mental attitude be ever of the optimistic turn, even under the greater stress.

For, know, the Lord is in His holy temple and will meet thee there.

And thy body, thy mind, Is that temple. As a man thinketh in his heart, so Is he. Thus walk with Him, speak with Him and draw nigh unto Him; and He, thy Lord, will do Thee good.

Concerning the Physical Nativity

A soul enters a body at the first breath physically drawn, or during the first 24 hours of cycle activity in a material plane. Not always at the first breath, sometimes there are hours, and there are changes even of personalities as to the seeking to enter.

Endocrine System

The endocrine system is a system of glands that involve the release of extracellular signaling molecules known as hormones. The endocrine system is instrumental in regulating metabolism, growth, development and puberty, and tissue function and also plays a part in determining mood.

There are centers, areas, conditions in which there evidently must be that contact between the physical, the mental and the spiritual. The spiritual contact is through the glandular forces of Creative Energies, not encased only within the Lyden gland of reproduction, for this is ever - so long as life exists - in contact with the brain cells through which there is the constant reaction through the pineal.

Pituitary Body

"**Function**: Extracts give a substance which causes constriction of the blood vessels with rise of arterial blood-pressure.

This substance seems to have a stimulating effect on most of the smooth muscles, acting directly upon the muscle causing contraction. It also increases the secretion of the urine; of the mammary glands when in functional activity; and of the cerebrospinal fluid. Many authors regard the pars nervosa and the pars intermedia as the posterior lobe. The pars anterior exercises a stimulating effect on the growth of the skeleton and probably on connective tissues in general.

Enlargement of the hypophysis and the cavity of the sella turcica are found in the disease **Acromegaly**, which is characterized by gradual enlargement of the face, hands, and feet, with headache and often a peculiar type of blindness. The blindness is due to the pressure of the enlarging hypophysis on the optic chiasma.

The Ductless Glands

Certain organs very similar to secreting glands, but differing in one essential particular, viz., they do not possess any ducts by which their secretion is discharged - that is to say they are capable of forming, from materials brought to them, **Internal Secretion** in the blood, substances which have a certain influence upon the nutritive and other changes going on in the body.

This secretion is carried into the blood stream, either directly by the veins or indirectly through the medium of the lymphatics.

These glands include the **Thyroid**, the **Parathyroids** and the **Thymus**: the **Pituitary Body** and the **Pineal Body**; the chromaphil and cortical systems to which belong the **Suprarenals**, the **Paraganglia** and **Aortic Glands**, the **Glomus Caroticum** and perhaps the **Glomus Coccygeum**. The **Spleen** is usually included in this list and sometimes the **Lymph** and **Hemolymph Nodes** described with the lymphatic system. Other glands as the: Liver, Pancreas and Sexual Glands give off internal secretions, as do the Gastric and Intestinal Mucous Membranes." - in "Gray's Anatomy", 1918.

The Effects of Certain States of Mind, Upon Glandular Secretions, and Digestive Juices, Causing Improper Activity in the Gastric Forces

"Constant comparison between his old state and his new showed a balance for the worse, which produced a constant state of gloom, or at least depression.
Now it has been shown experimentally that a constantly subdued frame of mind produces certain poisons in the blood, called katastates, just as virtuous feelings or pleasure and delight produce helpful chemicals called anastates.
The poisons, generated by remorse, inveigh against the system and eventually produce marked physical deterioration." - Theodore Dreiser, in "Sister Carrie", 1900.

Emotions and Attitudes, and its Influence on the Blood

"When unicellular organisms are caused to perform different mental activities correspondingly different structures arise in these cells - that is, if one group of cells is caused to feel and respond to some stimulus, and if another group of the same species of cells is caused to feel and respond to a different stimulus, and if these activities are kept up in both groups for several months, there will arise structural differences between these two groups of cells which correspond to the differences between their mentative activities.

Even in these physiologic units it is the mind which creates organic structure and regulates the metabolism. As is well known, all the organs of the human body are made up of cells, and each cell, as is shown by the above experiments, has its own mental life, and it is this mental functioning which constitutes its vitality.

The conclusion is, that the physiological processes are explicable only as psychologic functionings.

I found also that in cells the mind creates structural changes, and concluded that the cellular functions in the human body are psychological functions.

By a proper regulation of the environmental forces and bodily structures, the mind-activities of the cells of an animal body can be appropriately modified, and so can that consensus of the psychic activities of all of the cells of the body called the personal mind of the animal.

Mind creates every science and art, and therefore the science of mind - psychology - is the science of the sciences; and therefore the art of using the mind and the art of getting more mind - psychurgy - is the art of arts.

Mind is life. Life is not something different from mind.

The life of a cell is its mind.

The activities of a cell are psychologic activities.

Life and vitality and physiologic processes are solely mental processes." - Prof. Elmer Gates, in "New York Medical Times", pre 1897.

"Anabolism: Integrative, constructive, energy-conserving ch. changes in protoplasm, changes wherein intake exceeds output and weight is gained. Assimilative, synthetic metabolism. Cf. Katabolism.

Anastates: Materials formed during anabolism. Cf. Katastates.

Katabolism: Disassimilation. Destructive metabolism (q.v.). Analytic, breaking-down, disruptive, energy-expending ch. processes of living matter resulting in production of simpler ch. compounds and waste products. Opp. anabolism (q.v.).

Katastates, bio. Waste products. Cf. Anastates." - Surgeon Rear-Admiral Charles Marsh Beadnell, in "Dictionary of scientific terms, as used in the various sciences", 1938.

"**Mesostate:** A substance intermediate in formation and complexity between Jiving protoplasm and its secreted or excreted products, or the food from which it is built up. The former are called katastates; the latter, anastates, q.v." - Dr John S. Billings, AM, MD, LLD Edin., and Harv., DCL Oxon., in "The National Medical Dictionary", 1890.

Nutrition and Metabolism

"Thus we see that saliva contains ptyalin and mucin, and the question arises, how are these secretions formed in the salivary and mucous glands?

The gland-cells are bathed on the one hand in the plasma of the blood, and on

the other hand their secretion is poured forth into the lumen of the tube which leads to the duct.

Is the secreted ptyalin or mucin simply extracted from the plasma, or is it manufactured out of the materials of the plasma?

The latter seems the more probable view. They seem to be formed by a process of chemical change or metabolism in the gland-cell.

Moreover, it is probable that they are not formed directly, but that, during the resting condition, the protoplasm of the cell, in and through its special vitality, elaborates the plasma into an intermediate substance, from which the mucin or ptyalin will be elaborated in the active stage.

We may call the special intermediate substance mother of mucin, or mother of ptyalin; but to such intermediate substances in general the term **mesostates** has been given.

There are 2 kinds of Metabolism:

1. In one the new molecules formed are more complex and more unstable than those out of which they are formed. This is termed **Anabolism.**
2. And the intermediate substances which may be formed during the process are called **Anastates.**

The process involves the storing up of energy. In the other the new molecules are less complex and less unstable than those out of which they are elaborated.

It is called **katabolism,** the intermediates being termed **katastates**.

The process involves the setting free of energy in the form of heat or visible motion. It is under this latter category that the processes of secretion fall.

They are katabolic processes, and the mother of mucin and mother of ptyalin are katastates.

On the other hand the conversion of dextrin into glucose is an anabolic process, the molecule of sugar being more complex than that of dextrin, while maltose, as an intermediate substance, is an anastate." - Prof. C. Lloyd Morgan, in "Animal Biology", 1887.

"Living protoplasm, like dead protoplasm, is continually giving off heat, carbonic acid gas, water, and some nitrogenous compound, but unlike dead protoplasm it does not disintegrate and disappear.

It maintains itself by replenishing its lost matter from the food taken in. But food may be very different in its chemical and physical properties to that protoplasm into which it is to become incorporated, and which transiently it will become.

Clearly, then, between the taking in of crude food substances at one end, the building up of these into living protoplasm, and the discharge of waste substances at the other end of the cycle of vital activities, some profound changes must occur.

The food must undergo a series of modifications, at each stage of which it becomes more like protoplasm, less like food, until at last it is living protoplasm

itself.

This building-up process of the food into living protoplasm we may speak of as anabolism or assimilation, and the different bodies formed in the successive stages as anastates.

No sooner are these anastates incorporated into living protoplasm, than they unite with oxygen, a process which constitutes the fundamental act of respiration.

Thence the protoplasm breaks down into more and more highly oxidized bodies or katastates, and at each stage in this down-breaking process the products of oxidation become successively less like the protoplasm from which they are derived and resemble more the ultimate waste products to which they will give rise.

This series of changes constitutes katabolism. And the whole cycle of changes comprised under anabolism and katabolism may be termed metabolism." - P. Chalmers Mitchell, in "Outlines of Biology", 1911.

"The taking in of oxygen might be looked upon as a kind of feeding process, the food being gaseous instead of solid or liquid, just as we might speak of "feeding" a fire both with coals and with air.

Moreover, as we have seen, the giving out of carbon dioxide is a process of excretion.

It is, however, usual and convenient to speak of this process of exchange of gases as respiration or breathing, which is therefore another function performed by the protoplasm of Amoeba.

The oxidation of protoplasm in the body of an organism, like the combustion of wood or coal in a fire, is accompanied by an evolution of heal.

That this occurs in Amoeba cannot be doubted although it has never been proved. The heat thus generated is, however, constantly being lost to the surrounding water, so that the temperature of Amoeba, if we could but measure it, would probably be found; like that of a frog or a fish, to be very little if at all above that of the medium in which it lives.

We thus see that a very elaborate series of chemical processes is constantly going on in the interior of Amoeba.

These processes are divisible into 2 sets:

1. Those which begin with the digestion of food and end with the manufacture of living protoplasm,
2. And those which have to do with the destruction of protoplasm and end with excretion.

The whole series of processes are spoken of collectively as metabolism. We have, first of all, digested food diffused through the protoplasm and finally converted into fresh living protoplasm: these are processes of constructive metabolism or anabolism.

Next we have the protoplasm gradually breaking down and undergoing conversion into excretory products: this is the process of destructive metabolism or katabolism.

There can be little doubt that both are processes of extreme complexity: it seems probable that after the food is once dissolved there ensues the successive formation of numerous bodies of gradually increasing complexity (anabolic mesostates or anastates), culminating in protoplasm; and that the protoplasm, when once formed, is decomposed into a series of substances of gradually diminishing complexity (katabolic mesostates or katastates), the end of the series being formed by the comparatively simple products of excretion.

The granules in the endosarc are probably to be looked upon as various mesostates embedded in the protoplasm proper.

Living protoplasm is thus the most unstable of substances; it is never precisely the same thing for 2 consecutive seconds; it "decomposes but to recompose", and recomposes but to decompose: its existence, like that of a waterfall or a fountain, depends upon the constant flow of matter into it and away from it." - Pro. T. Jeffery Parker, FRS, in "Lessons in Elementary Biology", 1891.

"Protoplasm is no longer looked upon as a substance of a definite chemical composition and constitution, as it must vary widely in its specific properties in the different species of plants and animals, and even in the different organs of the individual, and the varieties of protoplasm are therefore innumerable.

In addition to these variations, arising from the characteristics of protoplasm in different species, and in their highly differentiated organs, the anastates representing the successive steps of its elaboration, and the katastates resulting from its destructive metabolism, in the same individual, must vary with the ever changing conditions of the environment, and the functional activity of every part of the organism.

Individual variations from the prevailing type of the group, or family, are thus readily accounted for by a disturbance in the symmetrical balance of the metabolism of the different organs of the body, by prevailing habits, or changes in the environment and conditions of food supply.

The protoplasm of the body presents, many differentiated varieties adapted to the specific function of each organ, and its katastates differ accordingly.

The various glandular secretions, the products of nervous and muscular activities, the numerous excretory products, and even the germ cells, so far as their molecular structure is concerned, must be considered as katastates of the protean varieties of protoplasm.

The so-called body plasma must then be looked upon as made up of many differentiated subdivisions in genetic relations with many katabolic products, all of which are correlated, through vital activities, to act in harmony to serve the entity we recognize as the individual.

The differentiation of a germ plasma especially concerned in the function of reproduction must be accepted as a physiological factor of the first importance , but we are not warranted in assuming that it is exempt from the metabolic transformations that characterize other living substances." - Dr Manly Miles, MD in "Heredity of Acquired Characters", Proceedings of the American Association for the Advancement of Science, 1892.

"It must not be forgotten that all the organs of the body do to a certain extent share mutually in nutriment and in waste products, and that thus, besides the characteristic specific protoplasm acquired through direct continuity, both germinal cells and developing embryo may accumulate a proportion of characteristic anastates and katastates, acquired as it were "pangenetically" from the organs of the body." - Prof. Patrick Geddes, in "Theory of Growth, Reproduction, Sex, and Heredity", in Proceedings of the Royal Society of Edinburgh, 1886.

Emotion and Metabolism

"A number of years ago I studied the effects of emotions on the body and especially on the chemical character of the bodily secretions and excretions; and I discovered that the sad and depressing emotions augment the amount of poisonous constituents that are eliminated from the body through the excretions; and found also that the happy and cheerful emotions augment the nutritive chemical constituents of the bodily secretions.

It happened that the presence of some of these poisonous constituents in the bodily excretions was made known by chemicals which colour the excretions on being analysed, and of course the colour of the precipitate or solution depends on the particular chemical reagent that is used, - being perhaps pinkish in one case and blackish in another. This was sensationally misinterpreted by certain writers, and has led to the supposition that the emotions were registered in colours, which have some kind of causal relation to the emotions; nothing can be farther from the truth than the report that I have a "wonder bottle" in which the emotions are recorded in terms of the chromatic scale.

This is what I have actually done in that line: I have studied the effects of the emotions on metabolism, and not of thought on metabolism. I must first explain what I mean by emotion.

The mind is made up of the intellect, which consists of states and processes of the sensations of at least nine kinds, images, concepts, ideas, thoughts, reasonings, and introspections; by the intellect we know or cognize truth.

The mind consists also of feelings; such as the feelings of the bodily organs, the appetites, the desires, and the emotions; the mind also consists of the volitions and conations; and also of the subconscious processes that underlie all the conscious states.

I studied the effects of the feelings on metabolism - such feelings as pleasure and pain and the different emotions; and I did not thus study the effects of the intellectual functions which I have named, or of the volitions, etc.

Metabolism is the name of all those chemical changes taking place in the bodily cells by which their nutrition is accomplished, and by which growth, repair, and the excretion of their by-products takes place.

When metabolism results in growth and gain to the individual it is called anabolism, and its products are anabolins; when it takes place at a loss to the individual it is called katabolism, and its products katabolins.

I discovered that the happy emotions augment anabolism, and named the products anastates; and that the painful and depressing emotions augment katabolism, and I have named the products katastates.

The chemicals by which the katastates are detected produce certain colours with the excretions collected during the remorseful and sad emotions; but if a different chemical were used as the analytic reagent the colour would be entirely different.

Bodily Effects of Emotions

It need not surprise anyone that the emotions of sadness and pain and grief affect the bodily secretions and excretions, because everyone must have observed that during these depressing emotions the respiration goes on at a slower rate; the circulation is retarded, digestion is impaired, the cheeks become pale, the eyes grow lusterless, and so forth; whilst on the other hand, during happy and joyous moods, the respiration and circulation are accelerated, digestion is augmented, the cheeks grow rosy and the eyes bright, and so on.

The system makes an effort to eliminate the metabolic products of tissue-waste, and of the depressing emotions, and it is therefore not surprising that during acute grief tears are copiously excreted; that during a sudden fear the bowels are moved and kidneys are caused to act, and that during prolonged fear the body is covered with a cold perspiration; and that during anger the mouth tastes bitter, - due largely to the increased elimination of sulpho-cyanates.

The perspiration during fear is chemically different, and even smells different, than during a happy mood.

Please note that it is not the effect of thought but of emotion that I have in this instance studied; and the proof is conclusive that we can by a mental effort induce emotions which directly alter the bodily metabolism.

Let me summarize Experiment No. 19 as recorded in my records.

A subject submitted to urinalysis every 3 hours daily and nightly until the standard amount of urea and other eliminated katabolins was determined - taking account of a certain average daily range of normal variation. But when by an effort of will, he caused himself to recall all the unhappy and sad experiences of his life, so as to make the emotions of remorse, grief, and shame become dominant, there was always a notable increase in the quantity of poisons eliminated. Remember

this is not due to thinking, or ideating or imaging the events of his past life, but to emotions. By training the happy and good emotions life and health are promoted; and submission to the evil emotions obstructs and shortens life, - and thus even in its very bio-chemical nature the Universe is moral.

In the course of evolution all life-destroying acts become painful and all life-promoting acts become pleasurable; and by proper training the depressing emotions can be practically eliminated from life and the good emotions rendered potently dominant. All this is extremely optimistic.

Practical Results

Through the skin, kidneys, lungs, and bowels there takes place, during health, a constant elimination of the waste-products and by-products of destructive tissue-changes; and if these katobolins of waste and the katastates of depressing emotions were not thrown out of the system, death would result quickly. If the skin becomes inactive through cold, congestion of the lungs quickly follows; if the kidneys fail to excrete these poisons through the urine, the deadly uraemia sets in, and so on. **Now, it can be shown in many ways that the elimination of waste products is retarded by the sad and painful emotions; nay, worse than that, these depressing emotions directly augment the amount of these poisons.**

Conversely, the pleasurable and happy emotions, during the time they are active, inhibit the poisonous effects of the depressing moods and cause the bodily cells to create and store up vital energy and nutritive tissue-products." - Prof. Elmer Gates, in "Physiologic Effects of the Emotions", The World To-Day, Vol. IV, No. 4, April 1903.

"We are now in a position to understand in a general way the relations between the different kinds of chemical change that take, place in the protoplasm of a yeast cell, which may be taken to represent cells generally.

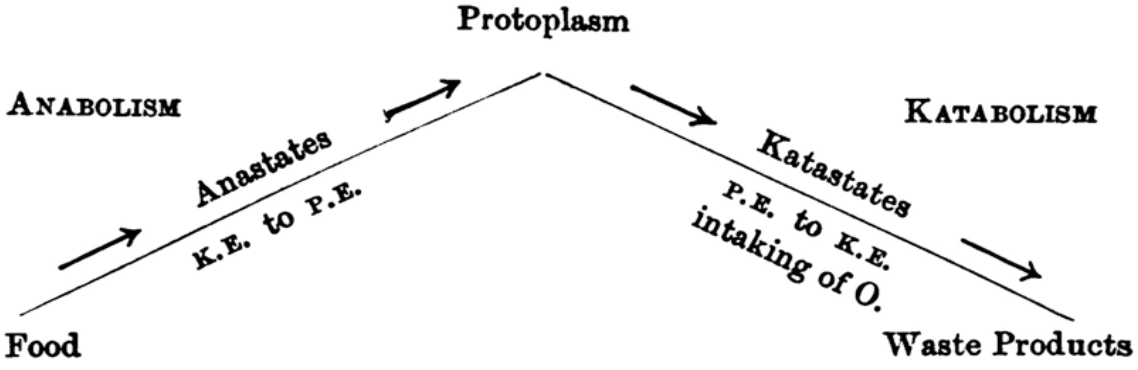
These chemical processes taken collectively constitute what is known as the metabolism of the plant and they are obviously of 2 kinds:

1. Processes of up-building or constructive metabolism (anabolism, assimilation).
2. Processes of down-breaking or destructive metabolism (katabolism).

In anabolism the food is converted into increasingly complex bodies (anastates), which reach their climax in protoplasm, and at the same time kinetic energy is converted into potential.

Katabolism, on the other hand, involves the degradation of protoplasm into simpler and simpler compounds (katastates) till at last waste products are reached, and during this process potential energy is converted into kinetic, by which the organism is worked. Since katabolism is a process of oxidation it cannot, as a rule, go on without a supply of free oxygen from without.

The preceding facts may be illustrated by means of a diagram.



Kinetic Energy (K.E.), Potential Energy (P.E.), Oxygen (O.)" - J. R. A. Davis, Professor of Biology, in "An Elementary Text-Book of Biology", 1893.

The Influence of Emotional States on the Functions of the Alimentary Canal

"**Not only are the secretory activities of the stomach unfavourably affected by strong emotions; the movements of the stomach as well, and indeed, the movements of almost the entire alimentary canal, are wholly stopped during excitement. There is no doubt that just as the secretory activity of the stomach is affected in similar fashion in man and in lower animals, so likewise gastric and intestinal peristalsis are stopped in man as they are stopped in the lower animals, by worry and anxiety and the major affective states an emotional disturbance affecting the alimentary canal is capable of starting a vicious circle; the stagnant food, unprotected by abundant gastric juice, naturally undergoes bacterial fermentation, with the formation of gases and irritant decomposition products. These, in turn, may produce mild inflammation or be absorbed as substances disturbing to metabolism, and thus affect the mental state.** And the depressed mental state that accompanies "indigestion" may still further prolong the indigestion. The importance of avoiding so far as possible the initial states of worry and anxiety, and of not permitting grief and anger and other violent emotions to prevail unduly, is not commonly understood, for the subtle changes wrought by these emotional disturbances are not brought to consciousness, and are clearly known solely through physiological studies. Only as these effects are better understood can the bad results be avoided, or, if not avoided, regarded and treated with intelligence. **The influence of emotions on digestive functions is as important a consideration for the physician as it is for the patient.**" - Dr W. B. Cannon, MD, in "The Influence of Emotional States on the Functions of the Alimentary Canal", The American Journal of the Medical Sciences, 1909.

Chapter 51

Clinical Methodology & Therapeutics

"When we are called to the bedside of the sick it is to give help, and that as speedily as possible. by such means as lie within our knowledge. Our patient is entitled to the best and most approved method of treatment at our hands, and it becomes our duty to see that he gets it. Whether this help goes out to him in the form of suggestion for a change in his habits of living or thinking, or through the aid of "other therapeutic methods", he is entitled to the highest we can give. We must recollect that the patient seldom cares for our theories regarding the practice, what he wants is help in time of present trouble." - Dr C. Spencer Kinney, MD, in "Auto-Intoxication, Overstrain, Exercise and Bathing", 1905.

"In the first place, stop the expenditure of nerve energy; secure rest; feed the proper foods, in proper quantities and in proper combinations, which gives necessary physiological rest; give the body proper care in bathing, rubbing and clothing, and then poise the mind. The whole of therapeutics is contained in that short outline." - Dr J. H. Tilden, MD, in "Gonorrhea and Syphilis", 1912.

"The body's symptoms are a signpost. Suppressing and fixing scary symptoms only begets more complex challenges." - Dr Kelly Brogan MD, 2019.

"Before you treat someone, ask him if he's willing to give up, the things that have made him sick." - Proverb

Cleanliness is said to be next to Godliness

"A very old adage which I have found to be no less true in the treatment of all diseases which have come under my observation.

It is my custom to first make clean my patient, outside and inside so far as practicable, by the free use of pure water and good soap.

I have never seen nor had a bad result from the use of these agents.

I am of the opinion that in many cases all the medicine that is needed is the free judicious use of water, abstinence from food, plenty of pure air and sunshine. These agents, together with a clear conception and observation of the laws of hygiene will figure very conspicuously in the future of medicine.

In the treatment of disease there are 3 distinct steps:

1. A correct diagnosis, ascertaining the cause;
2. Absolute cleanliness by irrigation internally and the free use of water externally, and by the use of disinfecting agents;
3. Repair the damage, heal the wound, restore nature, rather assist nature in her work of reconstruction."- Dr James Osbourn DeCourcy, MD in "Diseases of the Alimentary canal, Treatment, Internal and External Hydrotherapy", JAMA, 28 July 1894.

"Dr E. C. Dent, Superintendent of the Manhattan State Hospital, West, Ward's Island, New York City, says: "Our principal aim is to restore as quickly as possible the normal functions of the body, and our treatment can be summed up in two words, eliminative and supportative. I feel that it is an important field that has not been given the consideration it should."

Dr. G. J. Rogers, Superintendent of the Northern Indiana Hospital for Insane, Logansport, Ind., says:

"Deranged mental states clearly due to auto-intoxication have not been infrequent, and treatment directed towards the restoration of physiological nutrition and excretion effects a cure, often very promptly."

Dr. Albert E. Stern, an alienist, of Indianapolis, Ind., says:

"While there must be no doubt whatever that mental abnormalities may arise through toxic influences or to autotoxic genesis. I believe quite firmly that very many different phases of mental alienation may arise in different individuals upon the same or similar basis due to disturbances of metabolism. It is my invariable rule to cure as far as I can the concomitant elements of autotoxicity in the case, because I have long ago learned that the latter must be overcome, no matter whether it is secondary or primary in its relation to the mental state."

Dr. W. A. Gordon. Superintendent of the Northern Hospital for the Insane, Wisconsin, says:

"Various conditions which are called acute mania and sometimes melancholias are, I believe, caused by intoxicating elements. We seek to eliminate and at the same time to improve the patient by a liberal, easily digested diet. We eliminate by mercurial and saline cathartics, by the wet pack, hot and cold, by the sweat box, electricity and steam, by frequent bathing and by insisting on copious ingestion of water by our patients. It is in

this field that I believe the greatest advances will be made in our knowledge of the causes and in the treatment of insanities."

Dr. Moses J. White, Superintendent of the Milwaukee Hospital for Insane, Wauwatosa, Wis., says, that:

"Almost every case is pursued on the assumption that the element of auto-intoxication is present in a greater or less degree and we have had very gratifying results by the pursuit of this theory and the treatment adapted thereto. The measures chiefly used to relieve this condition consist in increasing the action of the skin and bowels by means of Roman Baths and massage and the administration of saline cathartics persistently and the employment of a high enema, and we found that these methods proved to be very efficacious."

Ancient Roman Bathing Practices: Starts with relaxation in a room heated by a continuous flow of hot, dry air, allowing the bather to perspire freely.

Bathers may then move to an even hotter room before they wash in cold water.

After performing a full body wash and receiving a massage, bathers finally retire to the cooling-room for a period of relaxation." - Dr L. Vernon Briggs, MD, Physician to the Mental Department Boston Dispensary, in "The Boston Medical and Surgical Journal", 5 January 1905.

Clinical Methodology

The Emunctologist should always be aware of conditions manifested in different parts of the Anatomical Body; either in limbs, or, in any internal organ, that show malfunctioning, through poisons from the system, caused by auto-intoxication. **Thus the increase of the eliminations is a must, if a cure is to be achieved.**

"The successful treatment of the patient from the wider general point of view embraces many points which are often considered beneath the dignity of an allopathic medical man to refer to in detail, largely on the assumption that such matters are of common knowledge. This, however, is no the case and even amongst educated persons the most elementary laws of hygiene, other than such rule-of-thumb procedures as tooth cleaning and the need for exercise, are apparently largely unknown. This being so it is wise to inquire into many seemingly minor points." - Dr W. S. C. Copeman, MA, MB, B.Ch., MRCP, in "The Treatment of Rheumatism in General Practice", 1939.

General Treatment

The following is an example of that should constitute the bases, in order to formulate an "Individual Plan of Treatment", these are elaborated, based upon each individual diagnostic.

These points should be evaluated:

1. Evaluation and corrective measures to the Diet.
2. Osteopathic Manipulation and Chiropractic Adjustments when needed, these given in a Neuropathic manner.
3. Hydropathic Treatments.

Massage, Manipulation, Manutherapy

"Manual or other mechanical stimulation by pressures or repeated light blows (concussion or sinusoidalization), massage, local or general.

The effects of raising or lowering blood tension, also in distribution of blood and body fluids, are produced reflexly through the vasomotor and the cerebrospinal systems of nerves. These can be elicited by pressure or blows upon certain well-defined areas: the vasomotor reflexes directly inducing an opening and closing of the arteries; the cerebrospinal by stimulating or depressing vagus-tone, also eliciting the reflexes of contraction in the hollow viscera.

Below is an outline of the physiology of vasoconstriction and vasodilatation (condensed by M. Arnold Snow) from Sajous:

"1. Vasodilation is due, in the case of arteries and veins, to the diminution of blood-plasma, and, therefore, of adrenoxidase, in the muscular layers of these vessels.

2. The blood-plasma being supplied to the vascular walls by the vasa vasorum, it is through contraction of these nutrient vessels that dilation of the vessels is caused.

3. The vasa vasorum receiving their blood-plasma from larger arterial vessels supplied with vasoconstrictor nerves, it is through vasoconstriction of these vessels that the volume of the blood circulating through the vasa vasorum is diminished.

4. It is therefore by vasoconstrictor action that vasodilation is produced, "vasodilator nerves" having no existence in fact.

5. Vasodilation being caused by constriction of the nutrient arteries of a vessel, the vasomotor nerves supplied to these nutrient vessels should not be termed "vasodilators" but "setrictodilators".

6. The mechanism of vasodilation is that through which all exacerbations of activity in any organ, whether belonging to the alimentary, circulatory, locomotor, visual, auditory, or any other system, is incited and sustained."

The effects of concussion or vibration on the cerebrospinal nerves, inducing the reflexes of contraction or dilation, as outlined by Abrams, are as follows:

"1. Contraction of the myocardium is associated with the heart-reflex of contraction. It increases pulse volume and diminishes frequency.

2. If the heart is weak and blood-pressure high, a strengthening of the heart will cause fall of pressure by concussion of the 7th cervical spine. Concussion properly applied can cause fall of blood-pressure. Vasodilators in drugs reduce blood-pressure by "paralysing the vasoconstrictor mechanisms."

3. If the heart is weak and vasoconstrictors do not "compensate the failing heart", a strengthening of the heart causes rise of blood-pressure by vibration of the 7th cervical spine. Concussion selectively supplied can raise blood-pressure.

4. Heart-reflex of dilatation increases area of cardiac dullness associated with no increase on diameter of the heart, as "heart-muscle can increase the size of its cavities without any corresponding augmentation of tension of its walls."

5. The aortic reflex of contraction is associated with stimulation "of the vasoconstrictor nerves or their centres in the cord. They emerge with the anterior roots as preganglionic fibres."

6. The aortic reflex of dilatation is associated with stimulation of the vasodilator nerves or their centres in the cord. They emerge with the posterior spinal nerves.

7. Stimulation of the longitudinal muscular fibres of intestines occurs in an intestinal reflex of dilatation.

8. Induction of contraction of circular fibres occurs in intestinal reflex of contraction.

9. The excretion of indican is promoted after 15 minutes concussion of the 1st 3 lumbar vertebrae, or corresponding intervertebral concussion, or heavy, slow vibration between the 1st and 2nd and 2nd and 3rd lumbar vertebrae.

10. An increase in volume of liver occurs (reflex of dilatation) by concussion of the 11th dorsal vertebra.

11. Depletion of liver is induced by exciting the reflex of contraction.

12. The tone of the splanchnic vasomotor mechanism is augmented by expression of the blood from the abdominal vessels to the right heart. This is effected by concussion of the spines of the 2nd, 3rd, 4th, 5th, 6th, 7th, and 8th dorsal vertebra", which correspond to splanchnic nerves from the 5th, 6th, 7th,

8th, 9th, 10th, 11th, and 12th dorsal nerves; or by corresponding intervertebral vibration.

13. A mechanical effect is exerted on the spleen by concussion of the first 3 lumbar spines, or corresponding intervertebral vibration causing a reflex contraction of the spleen.

14. Dilatation as well as contraction of kidney is induced, thus varying its volume, which depends on structural distention and the amount of lymph and blood in its vessels.

15. Concussion "stimulates the motor component of a spinal segment and subdues its sensory constituent."

It is abundantly demonstrated that vasomotor regulation can be achieved by the hand or other instrument exciting pressure on the paravertebral tissues and elsewhere. The physiologic explanations are plentifully scattered through text-books and clinical articles, and, even discounting heavily the assertions of optimists, the facts are demonstrable in the laboratory.

To quote from a paper by the author in "British Journal Diseases of Children, January 1905, **a co-relationship exists between the blood-supply of all organs and their functional processes. This involves the status of the blood supply in those segments of the cord in which the integral cell-bodies reside and from which, the viscera and other structures are innervated.**

Explanations of viscero-motor and other activities must be sought through utilizing a practical knowledge of the vasomotor mechanism and functions of the spinal segments through which a viscus is controlled.

Effects upon the blood supply of all parts of the body can be induced by mechanically stimulating the centres in the spinal cord more directly and forcefully (and hence, through them, exerted upon the sympathetic centres and ganglia) than by measures directed immediately to the organs disturbed.

Conversely, disturbances in the various organs, systems, and tissues being due to circulatory changes induced reflexly trough the central nervous system (the major portion of the nervous mechanisms being located in the spinal cord), disturbance of circulation in the cord is expressed by alterations in the vascular tonus in the structures of those parts supplied by the posterior primary divisions of the spinal nerves, as well as of the parts affected.

During the continuance of diseased states, or even lesser disturbances, pronounced alterations are to be observed in those tissues immediately innervated by fibres arising in the spinal segments whose integrity is thus affected by derangements in function of organs and areas dependent for vasomotor innervation upon those segments.

In brief, there is both a sensory and a nutritive reaction exerted upon the erector spinae muscles and allied structures, ligaments, etc., caused by the disturbed circulatory equilibrium in areas depending for control upon certain groups of segments of the cord.

There is, as has been said, a compensatory relationship existing between, first, the surface muscles and ligaments, skin, etc., supplied by the posterior primary divisions of the spinal nerves; and, second, the blood-vessels of the cord and the deep structures, organs, and remoter parts, innervated by fibres whose cell-bodies arise in the corresponding regions of the cord.

Any agent or irritant, mechanical, electric, infective, toxic, or other, which causes vascular constriction in the tissues of the back contiguous to the spinal column will produce (conversely) dilatation of the vessels in the cord, and of the organs and beyond parts in the line of innervation. General massage, judiciously applied, is capable of rendering excellent service in vascular hyper- or hypotension.

Brisk surface rubbing, friction, and pinching induce a rise in tension. Sensory reactions are thus produced contributing to mental as well as physical excitation. The most salutary results are due to enhanced lymph-propulsion. Slow, deep kneading, with little pressure, of the limbs and grosser structures raises tension.

Two of my most skilful and intelligent masseurs have made careful observations on patients for a number of prominent clinicians, and, I give a Summary of their Procedures:

In vascular hypertension, proceed with exceptional deliberation and continue for a full hour. Use no excess of force, no quick movements or touches. Lift the lateral muscle-masses, alternately, as taught by Weir Mitchell, and to our classes at the Philadelphia Infirmary for Nervous Disease, revolving and squeezing them slowly, seizing the upper structures and causing them to come away from the lower; rubbing the bones with the soft masses as a washerwoman rubs clothing on a board.

The intermuscular septa should also be separated, loosened, the fingers reaching in between and along the fascia, down to the ligaments and bones.

Over the abdomen, affecting the splanchnic circulation, especial care must be exercised, as here the most marked effects are wrought on blood tension.

Use an oil, to avoid sensory irritation, the flat of the hand, fingers cupped, action from side to side, over and under, one hand following the other, never compressing the tissues; later lift up the intestines from the pelvic bones with the entire hand (not the fingers alone), simulating a wave-like motion.

End with a general vibration of the entire trunk, and rest for an hour; leave surface well covered.

Massage acts on the circulation to the extent that it favours the movement of blood and lymph, lessening the work of the heart. It may be compared in many respects to breathing exercises. By active, forced inspiration a suction action occurs of the blood into the chest, and by expiration it is expelled.

Skin Stimulation by Surface-Friction and Subdermal Manipulation

The most efficient agency in securing full peripheral circulatory activity is thorough surface-friction, supplemented by deep subdermal stimulation.

Experience convinces me that by use of these measures we can secure more thoroughly and lastingly the compensatory functions of the surface circulation, supplementing the cardiac and deep vascular activities, including that of lymph-propulsion.

Skin-friction, involving sharp stimulations along with sensory reactions, also evolution of latent heat, temporarily sends up blood-pressure, seldom hurtfully, and is valuable in secondary low tension. Efficient skin-stimulation includes both surface friction and subdermal manipulation, a forceful loosening of the surface structures from the supporting fascia.

I am of the opinion that, when fuller attention is given to this measure, it will be found to compare favourably with the now well studied and rightly-esteemed elaborate measures of Hydropathy.

It is so readily applied, so convenient, and withal so simple, that the patient can apply much of it for himself. For best effects an expert is required. It is now known that passive sweating does not relieve nephritic disorders to the extent formerly believed. No more nitrogenous waste-products or salts are eliminated through diaphoresis in chronic kidney troubles than in health. The average cutaneous output in individuals in bed is, according to Loofs, 0.25 Gm. of nitrogen and 0.02 Gm. of sodium chloride per day in both healthy and nephritic alike.

The major effects of Balneotherapeutic measures depend for efficacy upon vasomotor stimulation, dilatation, and contraction of surface vessels and lymphatics.

Lymph-propulsion, which is a deliberate process of exceeding importance in nutrition and body-waste elimination, is too often not reckoned with therapeutically. Its chemical composition gradually changes as a result of stagnation or partial absorption, to favour one or another law of transudation, till it at length finds its way to the great blood and lymph centres and the lungs. Hence friction and subdermal manipulation, to be fully effective, must be unhurried, gradual. At first there is some skin pain; after 5 or 6 treatments there is practically none.

It is valuable and, as experience will prove, most refreshing to practise steady surface-friction by means of the hand or rough material as both a conservative and a curative measure. The best time is immediately on rising and before going to bed; also whenever the clothing is removed, or after being overheated.

Chilliness of the surface, whether temporary or due to hypersensitiveness, feeble elimination, adreno-thyroid hypofunction, or pronounced disease, is promptly relieved by dry friction.

Before taking a cool or cold bath it puts a healthy person into the best state to react swiftly and delightfully.

For one whose health is impaired, especially when vascular tension is low or the organism is surcharged with toxic wastes, whether arterial pressure be high or low, dry friction invites blood and lymph to the surface - the largest oxygenating machinery of the body, next to the muscles.

Whether it immediately lowers hypertension or not, the full activity of surface circulation places the individual in the best condition for relief of vascular spasm, or other interference with free ebb and flow in major and minor blood-vessels.

The object to he obtained in cardiovascular regulation is not merely a sudden drop or rise in tension, but an equilibrium. The measure of the value of this equilibrium is the length of time it can be maintained.

If due to a rational agency and based on right conservative principles, it makes for permanent progress toward betterment.

Next, of deep stimulation of dermal or subdermal structures.

Immediately beneath the skin and overlying the muscular and other structures

resides a rich grouping of vessels, both arteriovenous and lymphatic, larger, though less abundant, than those of the surface.

The derma in many persons, especially those near or past middle life, often becomes adherent to the subdermal supporting structures, impairing circulatory integrity. Attempts to seize the derma and lift it from the parts below are then found to be met with difficulties; whereas in perfect health it is freely movable and wonderfully elastic.

Contractures, rigidities, and adhesions have occurred, resulting from one or another morbid process. In my personal experience the forceful, systematic freeing of these adhesions, loosening up the attachments, rolling them back and forth until full original elasticity is secured, contributes enormously to health.

It is well known that wherever painful states have occurred (fibromyositis, fibrositis, neuritis, etc.) by free mobilization or separation the structures are relieved from pain. The phenomena are due to restoration of normal local circulatory balance, as well as to removal of pressure on sensory nerve-fibrils.

From this loosening of the skin adhesions is secured not only vasomotor stimulation, dermal and hypodermal vasodilatation, and relief of localized vascular spasms, but also, through the cerebrospinal nerves, are stimulated reflexes of contraction in the hollow viscera so well explained by Albert Abrams.

A pain-reflex is also elicited at first which rapidly lessens until, after a few treatments, there is actually no discomfort.

It is rather a motor stimulation, inducing marked and readily-demonstrated definite and regular reflexes of contraction, not only in the viscera, but also in the larger arterial trunks. By means of the fluoroscope I have seen the kidney, the stomach, the colon, and the aorta graphically contract.

Also, it is quite easy for anyone, at any time, to demonstrate the reflexes of contraction by percussion and palpation. Concussion of the vertebrae (notably of the seventh cervical), as Abrams has pointed out, is the most graphic method. Pinching the surface, as well as subdermal manipulation, induces the same phenomena to a lesser degree.

The modus operandi, which I direct and personally supervise, is as follows:

The skin of the whole torso is seized deeply and lifted up, bit by bit, gently but emphatically, and mainly over the vertebral and paravertebral structures; then it is rolled and slipped back and forth till mobile; then, both hands being used, the skin directly over the backbone is forcibly pulled away from the underlying structures.

Oftentimes there follows a sharp tearing or snapping sound, audible to patient or bystanders, as some obstinate adhesion gives way, causing pretty sharp pain.

Moreover, this pain-point is definitely related to that area in the spinal cord in which the cell-bodies lie through which are innervated (vasomotorially) the parts or organs in which pathologic processes have long existed.

The whole treatment occupies from 10 to 20 minutes. Then follows a sense of warmth, comfort, and relief to long-existing discomforts or distresses.

After 4 to 8 seances, all especially painful effects of the manipulation are gone.

The most graphic effects of this treatment are: equalization of surface temperatures, a slower and steadier pulse, increase of urination, especially if output has been below normal; greater regularity of bowel action (peristalsis being toned and steadied through reflexes of contraction induced); extremes of vascular hypo- or hypertension are modified - not always to pronounced degrees, but the effects seem more permanent. In brief, the clinical phenomena of vascular equilibrium are induced. Particular attention should be directed to the importance of tissue elasticity as a factor in blood-pressure.

This is a matter of great significance in relation to the skin, the vessels of which contain less muscular tissue than do those of other parts.

Cold applications to the skin render it firm and dense, and greatly increase its elasticity, thus tending to raise blood-pressure. This is true of all cold applications to the skin, especially those of 2 minutes or longer duration.

Sweating is one of the most effective means of lowering blood-pressure by reducing the volume of the circulating blood.

A large amount of blood is withdrawn from the general circulation by the dilatation of the cutaneous vessels, while at the same time the total volume of the blood is diminished by the serum poured out by the sweat-glands.

Skin-stimulation raises temperature in the surface areas, tends to relax sweat-glands, and hence enhances diaphoresis.

Colonic Irrigations, Enemata

Personal experience with washing out the bowel with water, alone or with chemical substances added, or with oil, has been satisfactory. Cardiopaths especially need to have the bowel freed from intestinal toxics; sufferers from renal disease even more urgently. There are better ways of restoring normal defecation, but enemata serve a useful purpose in emergencies. The one particular value of colon irrigations I have not seen noted is the remarkably prompt and efficient diuresis they induce. As to the supposedly hurtful effects of Colon Irrigations and Enemata, my personal experiences are negative. Purgative medicines, especially the more irritating ones, even the salines, are more pernicious. The ancient writers (the Egyptians) speak well of enemata.

There must be some peculiar value in washing out the bowel not yet explained.

I learned clinically that Colon Irrigations exert a very valuable effect on Arthritic disorders, especially Arthritis Deformans.

My own use of the remedy is for the purpose of:

1. Cleansing the bowel, especially of putrefactive products which accumulate.

2. To stimulate impaired peristalsis, or to soothe local irritations, or to relax spasm.

3. To act as a prompt diuretic.

Colon Irrigations of plain water usually suffice, at a temperature of about 24° C or even 16° C, when prompt evacuation is desired. At the temperature of the body little or no response is elicited, and the water remains in the bowel indefinitely, much of it being absorbed - desirable for diuresis.

As to salt (sodium chloride) being objectionable, the question seems unsettled. The Murphy method has much to commend it in a variety of conditions extraneous to this discussion. The chloride of sodium does not seem to be proved of any special harm, even in conditions of nephritis.

Martin H. Fisher gives good reasons for his recommendation of the use of alkalies (sodium chloride and sodium carbonate) in conditions of nephritis, upon the ground that the morbid state of the kidney is due to the content of excessive acids.

Not only does Colonic Irrigation, rightly administered, effect a clearing of hardened faeces, mucus, and detritus far more perfectly than does any laxative, but in certain states of diarrhoea it produces a quieting effect, removes irritating substances, and checks the absorption of toxics.

To clear an overloaded bowel of impaired motor-tone it is wise for the physician himself to administer the enema, at least on 2 or 3 occasions; later a nurse or member of the family may officiate.

Position is important. The knee-breast posture is the best; or lying on the left side at first until half the amount of water has been introduced, then changing to the right side.

The fountain syringe should be elevated enough to get an adequate pressure - 3 to 4 feet.

The fluid should be slowly introduced. If colic or "bearing-down" pains occur, the tube should be compressed till the sensation passes; then proceed till 1 litre or 1.5 litre are introduced.

If motor-tone is lost, or the impulse to defecate is weak, the addition of massage to the abdomen is of great use.

By lifting the abdominal contents from the lower quadrants, gently compressing and relaxing, the interior is kneaded, the reflex of contraction stimulated.

Ordinarily it is well for the patient to sit quiet after injection until the impulse to go to stool is strong or irresistible. It is often enough to use only a 250ml of cool water (16° C) by a "baby syringe" to stimulate an impulse to void faeces.

Full irrigations are needed only 2 or 3 times a week, lengthening the intervals to 2 or 3 times a month; meanwhile employing other devices to cultivate the habit-impulse, such as posture, along with movements imitating those of primitive man or four-footed animals, walking on "all-fours" and hopping about, stretching while recumbent or sitting on the floor.

Oil irrigations, after the manner of Kussmaul, are far better to overcome constipation.

Baths, Hydrotherapy, Balneotherapy

Cardiovascular anomalies are powerfully and more or less permanently influenced by baths, local or full. Extremes (i.e., above 38° or below 21° C) must be avoided. Hydriatic measures make heavy demands on the regulative forces of the circulation. Hence they should be used with caution at all times and carefully supervised. Every application should be based on accurate knowledge of the patient's condition at the time.

For present purposes we may consider the heart and vessels as one organ, the vessels being simply ramifying branches of the heart extending throughout the body. Those influences which affect the heart affect also the vessels.

In treating cases of arteriosclerosis, bear in mind the fact that secondary hypotension may have begun, although hypertension be shown at the moment.

Thus it will be plain that, to obtain best effects by hydrotherapy, the clinician must:

1. Achieve a fair concept of the existing pathologic status, the personal peculiarities, etc.,
2. Must begin any baths cautiously.

Intelligent experimentation is essential. In advanced cases, routine or standard measures will not suffice; all need revision, modification, specific adaptation.

Conditions arise where it is best to send the patient to some of the highly-equipped spas, balneotherapeutic establishments, that he may systematically undergo a process of cure and after-cure. Great is the power of impressiveness which these places exert: of rigid discipline in every act of the day and night.

By keeping in mind the principle that the chief desideratum of baths is to reinforce and sustain the heart-muscle.

The sun-bath, used with precaution and repeated daily until the skin is thoroughly tanned, is an effective means of combating degenerative changes in cutaneous vessels.

Moderate hydriatic measures of nearly every sort improve metabolism and thus check degenerative processes of the vessels which give rise to high blood-pressure.

All measures which improve the blood supply of the skin and maintain a vigorous circulation in the limbs (e.g., skin-friction and gentle exercises) are useful in cases of hypertension, especially in arteriosclerosis. In such cases great care should be taken to keep the extremities warm and to avoid general chilling.

Prolonged neutral baths, hot foot-baths, the Scotch douche to the legs, and leg-packs overnight are useful.

In mixed cases of doubtful origin, part psychic and part spasm, or possibly arteriosclerotic, with sensory disturbance, daily hot brine and- mustard foot-baths are indicated, to relieve cerebral congestion, vertigo, headache; also brief tepid full baths (34° to 35° C) and cold douches (29° to 31° C) followed by friction.

In patients with high blood-pressure from advanced arteriosclerosis without kidney lesions the effects of baths are variable; as a rule, little or no effect is induced by any kind." - Dr J. Madison Taylor, MD, in "International Clinics", 1914.

The Colon as Site of Focal Infection in Chronic Pyelitis, Cystitis and Prostatitis

"Dr. F. H. Redewill, MD, J. E. Potter, MC, H. A. Garrison, MC, quote an extensive literature on colonic disorders as the cause of genitourinary-tract infections, and report 22 cases which did not respond to usual methods of urologic treatment, but which were cured by treatment directed to correct the colonic conditions.

Citing the work of Herter, which showed that many varieties of Balantidium coli: "**Readily disintegrate peptones into putrefactive products, such as ammonia, volatile fatty acids, phenol, indol, skatole, and hydrogen sulphide, causing acute symptoms and prolonged pathological effects.**"

Citing the work of Bitter and Grundel which has shown that:

> *"Nonhemolyzing B. coli infection is characterized by a chronic pyelitis that requires months, or years to clear up."*

The authors, have collected a large series of cases of nonspecific urethritis in which the infections were directly traced to the colon.
In these cases the colon organisms showed a great preponderance of gram-negative bacteria.

The urethral disturbances appeared during periods of aggravation of the colonic conditions, which in turn, are due to 3 Etiologic Factors:

1. Infection in Teeth, Tonsils, Sinuses or Bronchi.
2. The Colon in a state of Putrefaction, Diarrhoea or Constipation.
3. Acute or Chronic Colitis.

In treating the 22 cases reported: 5 of Pyelitis, 4 of Cystitis, 13 of Prostatitis.
Methods: Diet Regulation, Colonic Irrigation, Administration of Acidophilus Milk." - Dr F. H. Redewill, MD, J. E. Potter, H. A. Garrison, MC, in "JAMA", 8 March, 1930.

Balantidium coli lives in the caecum and colon.

Therapeutics of Infectious Diseases

"In no other diseases must we trust so much to Nature's curative power as in the infectious diseases about to be discussed.

In most of them we are confronted with an unknown toxin, which manifests itself clinically by countless external and internal symptoms with the most varied complications.

The physician should keep constantly in mind the pregnant remark which Leyden made in the opening address at the Congress for Internal Medicine in Berlin:

> *"We have not only the disease, but, primarily, the patient, to treat, and nothing, not even an apparent trifle, is indifferent where he is concerned." - Prof. Dr Ferdinand Fruhwald, MD*

Therapy of Uremia

"It appeals to my constant effort in therapy to follow nature's methods when possible.

In the comparatively exceptional cases where nature fails to effect the cure, the substances causing the trouble in the intestinal tract should be removed.

[Diarrhoea is one of nature's methods of relief which we do well in copying, not in hindering.—Ed.]

Nature's Methods

There are 3 ways in which the human organism tries to get rid of the toxins circulating in the blood as a result of renal insufficiency:

1. Through the Skin.
2. Through the Stomach and Intestines.
3. Through increased excretion from the Kidneys.

This increased renal excretion is brought about in chronic Bright's disease, and particularly in interstitial nephritis, by the hypertrophy of the heart, which increases the supply of blood to the kidneys. **If uraemia, acute or chronic, develops, our therapy should try to aid nature in one of these 3 ways.**

Diaphoresis

In the first place, then, our therapy may be diaphoretic. It is clear that only a vigorous thorough sweating is of value.

By it, more water, proportionately, is excreted than toxins, which are left in a more concentrated form in the more concentrated blood.

This concentration of toxins after sweating is particularly to be feared in the oedema and hydrops so often accompanying Bright 's disease, as the oedematous fluid, rich in toxins, may be absorbed by the blood to take the place of the lost water.

The resulting excessively toxic blood may set up a severe acute uraemia.

A vigorous diaphoresis, then, no matter how efficacious it may often be, must always be used with extreme caution, until it has been proved safe in the individual case.

Purgatives

In the second place, our therapy may be directed towards the excretion of the toxins from the blood through the mucous membrane of the intestines by the use of purgatives.

Ingestion of Water

In all cases of chronic parenchymatous Bright's disease, abundant water should be taken by the mouth or, if that is not possible, by the rectum.

This is especially necessary if diaphoretic measures are being used.

The danger of the latter therapy can be much diminished if a quart of water is ingested 2 or 3 times a day to replace the water lost by perspiration.

Other Methods of Treatment

Colon Irrigation - If only very slight uraemic symptoms are present (slight headache, restlessness, sleeplessness, cramps in the legs), **hot Colon Irrigations are useful** (a quart [or several quarts—Ed.] of water at about 39 C, 3 times a day).

If only very slight uraemic symptoms are present (slight headache, restlessness, sleeplessness, cramps in the legs), hot Colon Irrigations are useful (1 litre [or several litres—Ed.] of water at about 39°C, 3 times a day).

These may also be tried in severe cases as an auxiliary measure, provided the heart action is good. Their effect is due to the washing out of the kidneys and the mild diaphoresis which results.

Stimulation of Saliva Secretion

Finally, it may be mentioned that nature has a 4th way of aiding the elimination of the toxins, through the salivary glands. Following Leube, the author has tried the stimulation of these glands by persistent use of chewing-gum, but has met with no success, even in very mild cases of uraemia,—such, for instance, as would yield readily to hot irrigations. [I have tried this method many times, and though I have obtained as much as 800c.c. of saliva in 24 hours, I have never seen any change in the symptoms, beyond increased thirst.—Ed.] I make it a practice to tell my patients about the nature of their disease, about its curability, about patients with a similar or worse type who are living active, healthy lives.

I encourage them to take up their profession or business if they have dropped it, or to continue in it, only warning them to live more rationally than has been their habit, with care in regard to diet, exercise, exposure, etc.

I endeavour to find out some other interest or hobby, especially one taking them out of doors, and to persuade them to devote more time to its cultivation." - Dr Norbert Ortner, MD in "Treatment of Internal Diseases, For Physicians and Students", 1915.

"**Treatment:** If proper treatment is observed, a cure may follow, and all the ill effects strongly portrayed if they are disregarded.

The diet must be carefully regulated, so that it will not only be easy of digestion, but of such character as will give a system which is soon to be subjected to the fire of a chronic contagious disease, the greatest amount of easily assimilated nourishment.

If the patients are gouty or rheumatic, all sweets, wines and malted liquors must be interdicted, and dark meats rarely allowed; the natural lithia waters should be taken ad libitum.

The teeth should be placed in good condition before the advent of the secondary symptoms; they must be regularly and properly brushed and the mouth kept clean.

Prepared salt water, sea water or sulphur baths, sponge and general, should be indulged in regularly.

In fact, all the Hygienic Methods which tend to maintain the Emunctory Systems: Kidneys, Gastro-intestinal tract and Skin, in the best possible condition should be advised, in order that the body may be able to repulse the inroads of the invading disease.

At the same time, the hygienic routine should not be made so irksome that the patient will rebel and refuse to continue." - Dr Bukk G. Carleton, MD, in "Prognosis and Treatment of Syphilis", 1900.

Treatment of Acute and Chronic Ulcers

"I have found no class of diseases yielding to treatment with greater reluctance than "old sores", or chronic ulcers.

Recently, I have adopted a plan of treatment which is quite different from that laid down in the books, and my results have been much better. Almost without exception, internal or constitutional as well as local treatment is necessary.

The internal treatment should be directed to the seat of the malady, thus eradicating the general pathological condition, eliminating the poisons and disease germs from the system. To accomplish this object, absolute cleanliness(internal and external), plenty of pure air and sunshine, the religious observance of the laws of hygiene, and a wholesome nutritious diet, are more useful and restorative in their effects than are drugs.

All the secretory organs of the body should be required to perform, as nearly as possible, their natural amount of work.

This once accomplished, and all nature's machinery kept lubricated and in good working order, the local treatment and work of reconstruction will be comparatively easy.

The sores, ulcers, acute and chronic, must be kept clean.

This is done very satisfactorily by the application of hot water.

If the parts cannot be soaked in the hot water, an ordinary fountain syringe can be filled with water (as hot as can be borne, without burning), elevated high enough to give sufficient velocity to the stream which is played over the parts, by the operator holding the nozzle of the syringe a short distance from the seat of application.

The frequency of the washing will depend upon the nature of the case, but should be repeated as often as necessary to keep it clean and free from offensive odours. To destroy pus and bacteria, and to aid nature in the work of rebuilding the parts invaded." - Dr James Osbourn DeCourcy, MD, in "The Denver Medical Times", 1894.

Influences That Lead to Nervous Diseases

"Overwork, over-enjoyment, exposure to the elements, physical influences, eating, clothing, etc., all have their influence in using up the nerve energy.

Where nerve energy is used beyond the recuperative power for a time, we have enervation following. This causes an interruption, retarding, of secretions and excretions. Add to this retention of excretions the toxins that evolve when the eating is beyond the digestive power.

This toxic state brings about functional derangement of the nervous system, and also functional derangement of various organs of the body.

An injury to any part of the body is liable to set up for the time being an enervated state of the nervous system supplying that particular part.

Waste products fail to be eliminated, but are deposited, causing irritation.

We have whole systems of healing based upon this derangement of the nervous system.

Where the nerves pass out of the spine they are liable to become cramped or impinged because of slight deposits, luxations, or displacements.

When this is true, the Osteopath and Chiropractor are almost invariably successful in giving relief and cure.

Where the condition is due entirely to a slight misplacement, the readjusting and righting of the anatomy must necessarily bring a cure; but where nerves are passing out through small foramina or openings between bones or other points, deposits are liable to take place when there is such a state of the blood as toxaemia, plethora, scurvy, or gout existing.

In these constitutional states there is a certain amount of deposit taking place in different parts of the body, and if a certain part of the anatomy is exposed to

irritations, if muscular energy is expended over a certain locality, causing a freer flow of blood to the part than is normal, deposits will take place.

If these deposits take place in small bony openings, where nerves and arteries pass out, the nerves will be impinged upon, then cause pain, neuralgia or rheumatism, and, when continued, arthritis and endocarditis.

To overcome nerve impingement, there must be absorption.

Manipulation and exercise will often bring temporary relief by causing absorption of the present deposits; but so long as the constitutional derangement remains, there will be a redeposit, and all tender points throughout the organism, all points where discomfort is once developed on account of this state of the blood, will reappear.

There can be no permanent cure until the habits of life are corrected to such an extent that the organism will no longer keep up its manufacture of toxins and pathological deposit.

It is obvious that manipulations of all kinds will be beneficial.

Electricity, vibratory treatment, massage, and certainly Osteopathy and Chiropractic Adjustments, will be followed with positive relief.

But such relief will often make the patient and doctor believe that a cure, has followed, when, if what I say is true, it is absurd to believe that a cure can be brought about in this way.

In addition to the so-called cure, the righting of the system, by correcting disease-producing habits, will remove the cause; and then a cure may be had that can be depended upon.

In injuries of all kinds there is a tendency for a deposit to take place, because nature rushes there with surplus material to make repairs.

But after there has been a restoration to the normal of the parts destroyed, and surplus material is, left, for instance, in the healing of bones, after the bone has been thoroughly united there is a great quantity of debris, not unlike joints made by plumbers; and these extra deposits must be absorbed in the course of time, especially the soft structures.

A bony deposit that has taken place will to a certain extent be absorbed, but there will always remain an extra amount, which is for bracing purposes.

In injuries, however, where there is no need of this surplus material, and where the surplus material impinges on a nerve structure, either a painful state will remain at that point, or the irritation will be reflexed to other parts of the body.

This will be the invariable experience, and will require a treatment which will overcome this condition.

Manipulation will cause absorption; but if there is a slight irritation at the locality, which will bring a surplus amount of blood, there will be redeposits and a return of the discomfort.

In all subjects where there is a scrofulous or gouty diathesis, and where there is a general toxaemic state of the blood, the redeposits will continue until the toxaemia is overcome and the system is readjusted to the original or normal state.

It should be kept in mind, in treating the sick, that whatever is necessary to be done to bring them back to the normal should be done; and it should be obvious to all intelligent people that where there are irregular habits or bad habits, where the life is not up to the normal, in any respect, these perversions must be righted.

There can be no hope of a readjustment and a bringing back to a normal state without correcting the errors of life." - Dr John H. Tilden, MD in "Impaired Health Its Cause and Cure", 1917.

The Influence of Autointoxication upon Nervous Disease

"Diseases are attended from the very beginning by disturbance of metabolism which allows not only the production of these intoxications but facilitates their activity.

Certain it is, that treatment directed wholly to counteracting autointoxication in certain diseases, such as Neurasthenia, Epilepsy, Hysteria, the Vasoneuroses, and other functional nervous and mental diseases is often so beneficial that the most sceptical become convinced that a close relationship exists between autointoxications and the occurrence of these diseases.

This is nowhere better shown than in the treatment of Epilepsy.

Strict attention to the condition of the avenues of reconstruction and elimination, combined with careful supervision of the diet, is often attended by as beneficial influence on the phenomena of the disease as is the most elaborate therapy." - Dr Joseph Collins, MD in "The treatment of Diseases of the Nervous System", 1900.

The Importance of Keeping the Consistency on the Taking of Treatments

Treatments should be kept for a consistent period, or as long as there are the indications from the physical reactions that there are the needs or the necessities. And the applications of therapeutics that will enable the body to not only make for a building up, but for a creating of resistances, should be adhered to more strictly, especially as in reference to the diets and the abstaining from sugars or sweets (save honey).

It is important to remember that each individual, the seeker, must have, and show a correct mental attitude of expectancy, of desire in achieving which it aims to obtain, health. Thus Therapeutics then must be carried on until there is seen, experienced, felt, the changes of a greater betterment in the general health condition of the individual.

Physical Treatment of Forms of Arthritis

"The classification of the types of joint inflammation is made with reference to their cause or origin as:

1. Traumatic
2. Gouty
3. Toxic
4. Infected

Those arising from infection may be subdivided into:

1. Locally infected
2. Toxic in origin

It is readily demonstrated that the swelling present following trauma or arising from toxic or infectious causes is the source of the pain which is aggravated by movement or pressure.

In "The Effects of Electrostatic Modalities in the Relief of Local Stasis and Pain, Journal of Advanced Therapeutics", p.166, March 1902, I first called attention to the fact that local stasis with infiltration in the normal tissue could be readily removed by electrostatic methods, and that the time to treat a traumatic injury was as soon as possible after the accident had taken place; before there had been a tendency to organization of the exudation or before plastic adhesion had taken place in a joint or elsewhere.

I have never had occasion to change my opinion and we have always been able to demonstrate the correctness of this point of view.

When it is generally recognized, as it has been by a large number of physicians, that the static current is capable of dissipating the infiltration present in swollen tissue whether associated with a congested joint, uterus, or prostate gland, it will not be necessary to enter into the description of methods so explicitly.

This contribution was an innovation to the older dictum, that "electricity should not be used in acute inflammatory conditions."

In discussing the paper which was read in Buffalo before the American Electrotherapeutic Association, Dr. William J. Morton confirmed the opinion expressed by me, basing his views on cases observed in his own practice.

At the present time it is generally known that the static and high frequency currents are indicated in acute inflammatory conditions.

The older notion referred to the use of the constant or induced current, and the dictum resulted from some accidents which had occurred from the early employment of these methods.

These older currents are not effective in removing the exudation from the swollen tissues, except when very superficially located in, the skin or surface.

The same is true of the applications of radiant light and heat, often incorrectly

called baking; though by this method the heat is induced well into the tissues by the transformation of radiant energy into heat.

With the use of dry heat, properly called baking, when employed at high temperatures, it is impossible to give relief from the induration except in the early stages of an inflammatory condition, when it may be possible so to dilate the lymphatics as to assist the flow.

When a condition of stasis is once established, however, and the tissues are indurated with the capillary and lymphatic vessels dammed up by the swollen, hardened condition of the tissues, it requires some measure which will act as a "vis a tergo" to force out the accumulated exudate, that is blocked up in the lymph spaces. The static modalities, the wave current, sparks or brush discharge, applied over the tissues so engorged, produce sufficient alternating contraction and release of the infiltrated tissues to drive out most of the exudate through the lymph channels and coincidently to relieve the muscular spasm and so relieve the condition.

When this was first revealed to me, I was treating a case of sprained hand with the static brushdischarge, and observed the swelling disappearing under the administration.

The hand, which was too painful to be manipulated before the treatment, after the first application could be handled and moved without pain.

Before this I had treated cases of arthritis of the ankle joint and other joints with success, but had not appreciated the modus operandi of the method, attributing the relief to removal of the hyperemia instead of the stasis.

From the date of this observation in the year 1900, the effects of and indications for the employment of the static modalities have been unquestioned.

Since then the results have been verified in all inflammatory conditions not the seat of local infection, in which they are naturally contraindicated.

This consideration of the principle of the action of the static current is made in order to explain its effects as a means of meeting the indications in the treatment of many cases of arthritis.

The only cases in which the method is not beneficial are those of ankylosis, of malignancy, or when germs are locally present in the joint, as in the case of tuberculous arthritis, or in rare cases in which pyogenic infection is present.

The Method Employed in the Cases of Arthritis

With the patient seated upon the insulated platform, encase the joint with metal for electrodes and connect it to the positive pole of the static machine with the negative pole grounded, and apply the current with an increasing sparkgap as the measure of dosage. The length of the gap will depend upon the part that is to be treated. For example a short spark-gap used for a small joint should be just short of causing muscular cramp. The same rule obtains with all joints. With the knee joint a spark-gap of from 15 cm to 25 cm will be required, varying with the size or development of the part.

The muscular tension, always present in cases of arthritis, involving the long muscles crossing the joint, should be relaxed; because the relief of the tension will remove much of the discomfort and relieve the pressure upon the surfaces, which if persistent, in cases of chronic arthritis, as in rheumatoid arthritis, will interfere with circulation and lead to erosion of the opposing surfaces.

Following the applications of the static wave current, static sparks should be vigorously applied to the joint and to the tense muscles, to remove the deep infiltration from the joint. When properly applied along the contracted muscles the sparks will completely remove the muscular tension.

Another method, which is employed in the inflammatory conditions of small joints, and as a part of the treatment of ankle sprains, is the static brush-discharge.

Not the so-called blue pencil discharge, but the static brush-discharge proper, applied with the patient connected to the negative side of the static machine with the positive grounded and the electrode moved about at a distance at which the discharge will produce a distinct sensation as of hot sand projected against the skin.

This application is made for the purpose of removing the superficial infiltration, and to hasten the absorption of the ecchymotic area where the blood is extxavasated beneath the skin.

The application is made usually until the skin has become distinctly hyperemic, not carrying it so far that too great irritation of the skin is produced.

This method of applying the static current is also used for removing induration around the margins of ulcers and wherever superficial induration is present, as with delayed union or with a traumatic injury with swollen margins, when a healthy condition can be restored which will heal without leaving scar tissue.

Muscular spasm as associated with all inflammatory conditions, as previously stated, is relieved by the static wave current or sparks applied over the contracted muscles.

In the management of uncomplicated traumatic arthritis, as previously stated, no treatment is required except the static applications unless ankylosis has occurred; when frequent applications of diathermy through the joint will prove effective as an aid in breaking up the adhesions, which may be accomplished when they are not too extensive or chronic.

In the management of toxic arthritis, due to the presence of foci of infection, as in the teeth, tonsils, vesicles, or elsewhere, treatment should be directed first to the source of the toxemia, which must be corrected as the initial part of the treatment.

Cases of involved tonsils, in the light of modern science are treated by the application of the ultra-violet rays through the mouth to destroy the infection in the tonsils.

They need rarely be removed, however, but left to perform the function of removing the germs in the secretions in the mouth. These conditions should be treated, as are the traumatic cases, with the static current or diathermy along the lines suggested, and as indicated in every case of toxic arthritis or neuritis. As for the treatment of infected teeth there is but one indication, their removal.

Furthermore, any tooth in which the nerve must be killed to save the tooth, should be extracted instead of being capped and filled, when it would sooner or later cause trouble.

The x-ray will as a rule find these capped teeth the ones causing the trouble.

Gout is undoubtedly due to a deranged condition of the liver caused by certain errors of diet or habit; very often attributable to alcoholic drinks.

The treatment of these cases is most satisfactory, and must include the vicinity of the liver, as well as the local condition.

The application of the static wave current is made with an electrode applied over the liver and epigastrium.

The electrode should be about 10cm in width and from 25cm to 31cm in length applied along the margin of the ribs, and the spark-gap should be long enough to cause marked contraction of the muscles beneath the electrode, in order that it may so affect the liver as to accelerate its function.

The treatment of the local condition should begin with the static brush-discharge, which should be applied until a marked degree of hyperemia is produced in the skin; then to be followed by the application of short static sparks.

This will remove at the first application most of the infiltration, pain, and tenderness. After the treatment, in an acute case, the patient will put on his shoe and leave the office with very little, if any, discomfort.

In cases that are not chronic two or three of these routine treatments will entirely relieve the conditions. In chronic cases, it will be necessary to treat the patient for his general metabolism, employing both radiant light and heat in addition to the local treatment, and treatment of the liver will be necessary.

A longer time may be required to effect a cure or relief of the condition in chronic cases.

There are 2 types of conditions of toxic origin, arising from intestinal infection:

1. Acute: Which, if any type of arthritis may be correctly called “rheumatism”, it is this type.

2. Chronic: Rheumatoid Arthritis. In both the affection is bilateral, more or less acute in its onset, and generally involving many joints of the body. The indication in the treatment of the former is to clear out the alimentary canal, and keep it clean. A strict non-protein diet, and castor oil followed by high colonic flushing daily with local static treatment as outlined will relieve, and generally cure the acute cases in a few days.

In bed-ridden cases clearing out the alimentary canal, as previously stated, with applications over the abdomen of radiant light and heat and administrations of salicylates or other intestinal antiseptics until the patient can go to the physician's office for the static or diathermy treatment is a rational course to pursue.

This affection was one of the first types of cases coming under the writer's observation when he began his service in Dr. Wm. J. Morton's clinic, at the New

York Post Graduate School and Hospital in 1898, and awakened an appreciation of the value of the static modalities.

It was the results obtained in the treatment of rheumatoid arthritis that demonstrated their important therapeutic value.

At first the only treatment given for these patients was the static treatment of the local condition and of the liver, which included applications of the wave current over the liver and the administration of the static wave current and static sparks to the joints.

In "Transaction of the American Electrotherapeutic Association", at Washington, DC, in 1899, I reported a number of cases which had been relieved or clinically cured by the static treatment.

For several years in the treatment of these cases the static modalities alone were employed, without reference to the alimentary canal and with relative success.

Later we became convinced of its infectious origin in the intestinal tract, and the patients were put on a meat-free diet, and daily Colonic Flushings were prescribed until the faeces were normal in character.

It is a part of the regular routine now to employ the static modalities, and control the intestinal infection, which is greatly facilitated by instituting a diet free from animal protein, and the use of High Colonic Flushing.

The application of the static wave current and static sparks to the joints in these cases relieves the local infiltration; and the dietetic regimen and the intestinal washings remove the cause.

Such uniform success has been derived from these methods in rheumatoid arthritis, that the routine method is followed with enthusiasm.

If the treatment above described is followed in cases where there has been no destruction of joint surfaces the case can be clinically cured, and in cases where there are structural changes such as erosions of the articular surfaces of the finger joints, these can also be relieved from an extension of the process.

Still's disease (rheumatoid arthritis), a form of general arthritis, was described by Spender as rheumatoid arthritis in children, but was later shown by Still to be associated with an enlarged spleen.

We have had 2 of these cases under observation, one an advanced case in a child of 8 years in which the chance of marked improvement was impossible, on account of the structural changes and contractures already present in many joints.

With the application of the static wave current to the joints, it was possible, however, to remove all of the tenderness and pain, which had been of years standing and make the little fellow fairly comfortable.

The other case came under observation before there had been any structural changes. It was a child 2 ½ years of age and was referred by a surgeon of the New York Hospital for Ruptured and Crippled. The joints in this case had, had 1 year of surgical management, a part of the time at the hospital in plaster, and with massage, but had not improved. **With the use of the static wave current applied with metal electrodes over the joints daily for a period of 6 weeks we were able to accomplish an effectual cure.**

This case and the other case were reported and published in "Static Electricity", p.87, 1904.

This case was again exhibited before the Orthopedic Section of the Academy of Medicine 5 years later, showing absolutely no recurrence of the trouble, and the young woman is now 20 years of age, well and without recurrence.

We are justified in calling this case a cure.

No part of the result in this case can be attributed to anything but the static wave current, for no dietetic or hygienic methods were or could have been employed in this case.

While diathermy is useful in some cases, as a rule its employment is redundant, except in cases of infected joints, of tuberculous and pyogenic infections, and in ankylosis.

In these cases, the joint employment of diathermy will be found to be useful in the earlier stage.

In cases of fibrous ankylosis, physicians whose experience has been large in army practice and others, have been successful with diathermy.

In bony ankylosis there can be no hope of relief from electrical treatments.

There is no class of conditions, however, in which greater satisfaction has been obtained with the static modalities than in the forms of arthritis as enumerated, when the methods are correctly employed." - Dr William Benham Snow, MD, in "Medical Record", 15 April 1922.

The Common Cold

For, it is a universal consciousness to the human body.

Thus it is almost as individual as all who may contract, or even come in contact with such.

Each body, as so oft considered, is a law unto itself. Thus what would be beneficial in one for prevention might be harmful to another; just as what might have beneficial effects upon one might prove as naught to another.

The cold is both contagious and infectious. It is a germ that attacks the mucous membranes of nasal passages or throat.

Often it is preceded by the feeling of flushness or cold sensations, and by spasmodic reactions in the mucus membranes of the nasal passages.

Then, precautionary or preventative measures respecting the common cold would depend upon how this may be fully judged in the human body, or as to what precautionary measures have been taken and as to what conditions exist already in the individual body. First: A body is more susceptible to cold with an excess of acidity Or alkalinity, but More susceptible in case of excess acidity.

For, an alkalizing effect is destructive to the cold germ. When there has been at any time an extra depletion of the vital energies of the body, it produces the tendency for an excess acidity - and it may be throughout any portion of the body.

At such periods, if a body comes in contact with one sneezing or suffering with cold, it is more easily contracted.

Thus precautions are to be taken at such periods especially.

This leaves many questions that might be asked:

1. Does draft cause a cold?
2. Does unusual change in dress?
3. Does change in temperature?
4. Does getting the clothes or the feet damp?
5. Etc...

All of these; **Affect the Circulation**, by the depletion of:

1. The Body-Balance.
2. The Body-Temperature.
3. The Body-Equilibrium.

Then, at such times if the body is tired, worn, over-acid or over-alkaline, it is more susceptible to cold.

Even by the very **changes produced through the sudden unbalancing of circulation, as from a warm room overheated.**

Naturally, **when overheated there is less oxygen, which weakens the circulation** in the life-giving forces, that are destructive to Any germ or contagion or such.

Then if there is that activity in which the body becomes more conscious of such conditions, this of itself Uses energies oft that produces Psychologically a susceptibility!

Consequently, this is one of the most erratic conditions that may be considered as an ill to the human body.

Much at times, may also depend upon the body becoming immune to sudden changes, by the use of clothing to equalize the pressures over the body.

One that is oft in the open and dresses according to the general conditions, or the temperatures, will be Less susceptible than one who often wraps up or bundles up too much - Unless - Unless there are other physical defects, or such conditions in the system, as to have reduced the vitality locally, or as a general condition through the system.

So much, then, as to the susceptibility of an individual or body to colds.

Then, precautions should be taken when it is known that such tendencies exist, that is:

1. Weakness.
2. Tiredness.
3. Exhaustion.

Or conditions arising from accidents as of:

1. Draft.
2. Dampness of clothes.
3. Wet feet, or the like.
4. Or contact with those suffering with a cold.

As is known, all vital forces are activities of the glandular system; and these are stimulated by specific glandular activity attributed to the functioning of certain portions of the system.

Then, when exposed to such, under the conditions as indicated, or the many other phases of such that make up the experience of an individual, these would be the preventative measures; the use of an Abundant supply of vitamins is beneficial, of All characters: **A, B, B-1, D, E, G, K.**

Vitamins are not as easily overcrowded in the system as most other boosters for a general activity. For, these are those elements that may be Stored, as it were, in their proper relationships one to another, to be called into use when needed, or necessary.

This does not mean that it may not be overdone as a preventative, or in cases where infection already exists.

For, that which may be helpful may also be harmful - if misapplied - whether by the conscious activity in a body or by an unconscious activity in the assimilating forces of a system. If this were not true, there would never be an unbalancing of Any portion of the functioning system; neither would there be the lack of coordination or cooperation with the various organs in their attempt to work together. It is true that the Functioning System (assimilating, distributing and eliminating system) attempts to create that necessary for a balance.

Yet, it can only use that it has at hand. Thus, with a deficiency of any structural building, blood building or tissue building influence, it may cause weakness by drawing on that necessary to supply the needed conditions for the system's balance.

For instance, if there is a bone fracture the body of itself creates that element to knit this fracture or broken area. Yet it does not supply or build as much of such element during the periods when the fracture does not exist.

Hence when it exists, unless there is an abundant supply of that needed, by or from that assimilated, other portions of the body will suffer.

Know that the body must function as a unit.

For, one may get one's feet wet and yet have cold in the head! One may get the head wet and still have cold in the head!

The same is true in any such relationships. For, the circulation carries the body forces in same, in the corpuscles, the elements or vitamins needed for assimilation in every organ.

For, each organ has within itself that ability to take from that assimilated that necessary to build itself.

These are conditions to be considered in preventing as well as in correcting colds. Hence, it may be said that, the **adding of vitamins to the system is a precautionary measure**, at all seasons when the body is the most adaptable or susceptible to the contraction of cold, either by contact or by exposure or from unsettled conditions.

The diet also should be considered, in that there is not an excess of acids or sweets, or even an excess of alkalinity, that may produce such a drawing upon some portion of the system (in attempting to prepare the assimilating system for such activity in the body) as to weaken any organ or any activity or any functioning as to produce greater susceptibility.

Hence there should be kept a normal, well-balanced diet that has proven to be right for the individual body, if precautionary measures are to be taken through such periods. Also there should be precautions as to the proper clothing, as to drafts, as to dampness of feet, as to being in too hot, or too cold a room, as to getting too tired or exhausted in any way or manner.

Precautions in all these directions, to keep a near normal balance are measures best to be taken towards preventing the contracting of cold.

When once the cold has attacked the body, there are certain measures that should always be taken.

First, Rest! Do not attempt to go on, but Rest!

For, there is the indication of an exhaustion somewhere, else the body would not have been susceptible.

Then, too, the inflammation of the mucous membranes tends to weaken the body, so that there is the greater susceptibility to the weakened portions of the body throughout the special influence of the lymph and Emunctory activity, such as the head, throat, lungs, intestinal system.

Then, if there has been an injury in any structural portions of the body, causing a weakness in those directions, there becomes the susceptibility, therefore the harmful effects from such. Then, find or determine next where the weakness lies.

Is it from lack of eliminations, which causes many ailments?

Hence quantities of water, as well as an alkalizer, as well as a booster to assimilating forces, are beneficial things towards producing a balance so that the cold and its consequences may be the more readily or easily eliminated or eradicated. **Do not neglect to take the precautions first.**

Then, if there is the contraction, determine the weakened factor; knowing that what will aid that portion of the body to more easily attain an equilibrium will prove to be the most beneficial. Many things, in many ways are beneficial to those

who have contracted cold, dependent, to be sure, upon the general constitution of the body, the amount of vitamins stored in the system, and so on. Also, **the response depends greatly on whether or not there is the opportunity given for rest, and the not eating too much**, so that the body may be aroused to gain its equilibrium. Hence it is necessary that there be given the booster for those portions of the body needing the stimulation; and those elements that produce more of vital energies are the more helpful influences.

Influenza and Its Osteopathic Management

"The diagnosis of influenza is largely clinical, and relatively easy. The onset is sudden, with generalized aching, fever, mild chills and marked prostration.

Usually the symptoms may be accompanied by mild inflammation of the nasopharynx, larynx, and trachea. The blood picture is one of leukopenia with a relative lymphocytosis. **Complications are many and varied depending upon the presence of secondary invading organisms, and the effectiveness of the treatment administered.** Among the important complications are lobar pneumonia and bronchopneumonia, pleuritis, pericarditis, meningitis, acute sinusitis, and otitis media.

A satisfactory management routine in uncomplicated influenza is as follows:

1. Rest in bed.
2. Bowel elimination with daily enema.
3. Copious fluids.
4. Liquid diet.
5. Well-ventilated sick room.
6. Bed confinement until 48 hours after evening temperature is normal.
7. Daily visit and treatment as necessary.

The obvious objective of treatment is directed to stimulate the reticuloendothelial system of the body to combat the infection early. The spleen, lymph nodes, liver, and capillaries of the bone marrow are structures directly concerned in producing phagocytic cells. The antibody content of the blood is increased by the cellular output of these same organs and its germicidal action is stepped- up to resist the invading organisms. Attention should be directed to the cervical and upper thoracic regions and especially the upper rib articulations.

Increased ventilation to the lungs should be sought by appropriate manipulation to the chest cage. **The lymphatic pump technic.** The osteopathic care of influenza definitely diminishes the course of the disease in point of time and severity. Thus the mortality from uncomplicated cases almost reaches the vanishing point. By retarding the virulence of the invading organisms, appropriate osteopathic treatment reduces the incidence of complications and forces down the mortality rate in these cases to a minimum.

Dr A.T. Still, said that the blood and tissues have in them a chemical mechanism that is nature's own preventive and cure of disease.

> ***"You do not need drugs, the blood has a hundred drugs of its own of which the [medical trade] doctor knows nothing."*** *- Dr A. T. Still*

How prophetically accurate his observation has been proved in the Osteopathic Management of Influenza." - Dr Edward A. Ward, DO, in "Journal of American Osteopathic Association", September 1937.

Cooperation in Treatment

The Basis of Success in Varied Forms of Obdurate and Protracted Maladies in which Nervous or Psychopathic Features are Prominent

"Many conditions encountered among nervous diseases, disorders, and their effects, being generic to other kinds of disability, require similar reconstructive measures. From them all emerge factors stimulating diagnostic skill and arousing therapeutic resourcefulness.

These problems range all the way from conditions originating in developmental errors, aggravated by disabling circumstances through acute, subacute, and chronic diseases to degenerative and disintegrative processes.

They involve also static or other gross structures, the sense organs, vegetative and reproductive, cardiovascular, renal and eliminative organs, also the great governing mechanisms, the adrenal system, all in addition to those morbid conditions of the nervous system from which the more graphic features may be derived.

Strange manifestations often occur through vasomotor vagaries, autonomic complexities, plus and minus vagotonies, and sympatheticotonies.

Then beyond and behind all these are hypertonies and hypotonies or instabilities of the ductless (endocrinous) glands.

All these must be reckoned with before we get down to the levels of structural or other alterations in the brain, spinal cord or nerves and their particularized effects.

To be sure, there are innumerable kinds and degrees of neuropathic and psychopathic tendencies, all harking back etiologically to familiar mental origins with bizarre settings.

The reason why better results are not achieved are, among others, that interest in neuropathologic problems is still exhibited overmuch in scholastic or strictly scientific research and too little in the alleviation of distressing or disabling by effects or residua.

The fons et origo of healing forces, of remedial efficiency, of therapeutic certitude, is hopefulness with a parabolic curve toward optimism.

To overcome morbid agencies, psychic or physical, the efficient agency must

possess, in addition to reconstructive energetics and restorative capabilities, a large measure of promise which needs to be presented in its most impressive manner.

There is needed an atmosphere of confident expectancy. This may well be subjected to special modifications in full accord with tact and diplomatic adaptations in individual makeup, with peculiarities, previous history, social plane; the mental, moral, and even religious training.

The status of physical development always demands careful investigation, especially any disturbing effects of previous somatic insults, not alone residua of disease, or of nutritive defects, but also the circulatory status.

Cardiovascular loss of tone is oftentimes the one factor most demanding restitution. The psychic impulse must invariably receive attention.

Fundamental Principles of Therapy

Cooperation with the dental surgeon: The significance of certain dental lesions, especially the insidious nonsensory variety, also of impactions, has been shown to be often vital in affecting nerves and brain.

Not only are these effects of dental irritation, obvious and direct through pain causing exhaustion, lowered resistance, and the like; but also by infections bearing heavily on general or local health, and especially by reflex effects through subconscious or non sensory peripheral irritation.

Anyone will doubtless concede the despotism of the aching tooth, the acute abscess, the humiliating pyorrhea alveolaris, but when the profoundly momentous, subtle, long-continued reflex perturbation induced by steady pressure exerted on a nerve terminal, the slowly accumulating excitation of an impaction, is brought to the foreground of attention, too often it is disallowed or even ridiculed.

Only briefest reference can be made here and now to this cardinal domain of cooperative effort. It is true little will be found as yet in medical literature.

A surprising mass of testimony is available in dental literature in the form of case reports, roentgen-ray details, pathological findings, and the like.

All this now needs correlation, association, and should be reduced to sequences and determinations.

While the instances wherein this factor has proven paramount may be few, they deserve full consideration in connection with any baffling or seriously retrograding state.

Personally I have had many vivid experiences in which, the apparent dental cause being removed, there eventuated extraordinary and unexpected betterments, notably in the psyche.

In others the gain was decided; in others no decision could be reached as to which factor was dominant. Too often little or no relief was thereby obtained, none the less an operation was fully justified as would be any other dernier resort.

Evidence as to the etiological bearing of dental irritation is not yet massive,

except in the rich findings, case citations, and the like, in dental and roentgenologic literature, which the Upson Foundation now affords means for collecting and digesting.

As a clinical resource it promises much in the face of otherwise hopeless neurogenic or psychogenic miseries. It is my opinion, affirmed with increasing confidence, that no neurologist does his full duty by certain kinds of cases till a roentgen-ray plate is made of all the teeth wherever suspicion is aroused as to possibilities of dental irritation being a casual factor in disorganization of psyche or substance. Psychoses due to irritation by impactions are said by Upson to differ in no notable particular from those due to abscess.

Critical study of suppurative processes shows that not only the quantity of the absorbed pus, but likewise its situation as an irritant as well as its neuronic associations is a determining factor in somatic or psychic integrity.

An abscess is commonly despotically obtrusive. It may cease to be so by reason of subsiding degrees of suffering, and by compensations.

The pain grows less, or awareness becomes obtunded, till it sinks below the threshold of consciousness, yet continues to exert irritation, inducing deeply acting, far-reaching effects.

Briefly, the short and certain route to health is the removal of any tooth exhibiting any marked irritation due to impaction or any recognizable evidence of alveolar abscess.

To be sure, too few dental surgeons can as yet be induced to accept this radical view, they being trained to save the tooth whenever possible.

Appropriate dental relief procedures, radical in character, are available, which surgeons are now capable of supplying if they will.

Root amputation with scraping of periosteum is an efficient measure but may be overdone.

The best measure is cleaning out the root canals and disinfecting.

The results of pus removal must emphatically be complete and thorough, or the neurogenic abnormality will persist, and valuable time and remediabilities will be lost.

Insanities may and do result. A life may be blighted to save a tooth as I well know.

Instances could be cited in which indomitable persistence over a period of time was required to achieve the dental emancipation.

Reconstructive Personal Hygiene

This includes regulation of items of conduct particularized for definite needs, whereby latent powers can be rendered available, inherent energetics brought to the front to meet exigencies of the individual in overcoming difficulties, in restitution of function, chiefly along the sensorimotor levels.

Postulate: Body and mind are one and indivisible. Physical training is equally mental training, restitution of nerve centers and subcenters.

Enormous potentialities reside in training voluntary movements with the purpose in view of readjusting static and also other mobile structures (kinesitherapy), hence making for mechanical easements of local pressures interfering with function, also expediting local and general nutrition, hence for restoration of local disabilities.

Note the significance of errors of posture, the economic advantage of recovering impaired degrees of attitude, of mobility, of pliancy, of flexibility, of elasticity, e.g., in the thorax, the spinal column and accessory structures; also of tonus in supporting structures, abdominal walls, compensatory action of diaphragm, and the like.

By such motor regulative measures stagnation is relieved in viscera, especially in the lower abdominal quadrants, activation of circulation, of lymph propulsion, of venous blood, of nerve impulses, also of reaction times and other factors of thigmotropic readjustment bearing on biochemical and also psychomotor and sensorimotor competence.

Note also the corollary rest treatment (akinesitherapy), abundantly elaborated from Hilton to Weir Mitchell, Playfair and modern phthisiotherapists.

Note also that passive movements or chiefly passive and moderately cooperative movements demand the personal attention of the physician or at least his critical supervision and particularized direction.

This measure has not begun to receive the scientific scrutiny it deserves; as yet it can only be known by one who has labored faith fully in the field and compared effects.

Among the conditions in which judicious passive, stretching, torsion, or hand applied movements are capable of large and increasingly beneficent consequences are:

Resultants of poliomyelitis, Cerebral palsies, Tabes, Some paraplegias, Effects of some cord lesions, Some stages of neuritis and some of paralyses of special nerves, of most neuralgias (notably when fibromyositis is present), in ties, spasms, also most valuable in paralysis agitans (see 3 papers by the author).

Occasionally also in acroparesthesia and in paralysis of plumbism.

Also in some of the disabling and distressful phenomena of premature aging, of senile degenerative processes, in arthropathies, in cardiovascular changes, in impairment of sensorimotor integrity, notably of the ear, eye and nasopharynx; disabilities of the neuromuscular mechanisms, and particularly of the gastro-intestinal tract, flatulence and minor shocks, intestinal stasis, adhesions, kinks, angulations, also enteroptosis, nephroptosis, local tonic spasms or relaxations of abdominal parietes.

The whole splanchnic blood-vessel system which, when markedly depressed or stagnated contributes largely to the effects, if not the causes of, neurasthenic, psychasthenic phenomena are alleviated by hand pressure and lifting of the subdermal structures, training of the abdominal parietes, diaphragm, thorax, and

correlated semi-voluntary structures.

Also "the great skin heart", the surface blood vessels, so often assumed to be normal in a given case of nervous disease yet in reality disordered, are vastly benefited by subdermal traction, the full equivalent of "passive hyperemia"; this often constitutes the key to progress. I have repeatedly been able to afford unexpected relief to a host of obstinate disorders by giving adequate attention to the skin, loosening the adherent subdermal structures, the chief seat of nerve, blood and lymph distribution and apply, which thus can be freed from compression, stagnation and the whole organism benefited. See "Cardiovascular Renal Regulation by Other Means than Drugs", International Clinics, 1914.

As an example of kinesitherapy in nervous disorders let me cite cooperation in treating the effects of cerebral palsies. Factors in cerebral palsies, causes and conditions to be reckoned with, are:

1. Primary damage to motor centres and areas of brain.
2. To subsidiary centres; the problems and phenomena vary with age and condition of life, stage of evolution in development and in growth forces, producing alterations in structures upon which primary and secondary effects are wrought.
3. Limitation of motor capacity and coordinate efficiency due to:

a) Original damage, partial or complete;

b) Depreciation in motor impulse and in encouragement to energizing from, or discouragement to energy, hence arise formation of habits of inactivity, indifference, cessation of effort, hence increasing incapacity;

c) Local spasms, contractures, rigidities, impairments of tissue elasticity, mobility and pliancy;

d) Concurrent myopathic disabilities, connective tissue and aponeurotic changes, fibromyositis.

Do not lose sight of the immediate value voluntary movements afford to cerebral and spinal centers.

This Weir Mitchell pointed out to me 30 years ago.

Motivation becomes impaired all along the line from primary impulse to precision in execution.

Whether there exists an abnormal weakness or fatigability may be in doubt; certainly impulse to energize is diminished, probably because of long disuse and discouragement.

Hence the motor cells involved in the brain need awakening and stimulating by conscious motor impulsion.

The question then presents:

How far can primary effects be overcome?
1. By mechanical and other stimulation, by volition, by domination of one's self or by extraneous domination, and
2. Also by passive effects wrought by electricity. (Many cases will be found to have received ample electrical treatment from the first.)
3. By passive movements, stretching, torsion, and specifically guided by motor training.

The late S. Weir Mitchell was a marvel of proficiency in curing patients.
Those associated with him professionally usually endeavoured to appropriate and apply his methods.

To those of his assistants like myself, having experience with other neurological clinicians, illuminating contrasts are afforded.
In my opinion the chief instrumentality of his amazing successes was his prompt and cordial cooperation with experts in correlated lines, himself not attempting to do it all.
The distinguishing characteristic of Dr. Mitchell was his radiant energy and his clearsighted recognition of the value of joint action.
He so stimulated the zeal of his adjutants as to get the best out of them not only in diagnosis but in treatment.
Thus an efficient coalition was constantly at work.
He uniformly said and did the judicious thing to create and maintain team work. In leadership he was wisdom personified in plan, in strategy, in shifting the point of approach, in creating useful surprises, in persistent effort, thus achieving the most economic and permanent results.
The patient was taught and insensibly assumed his or her share in the campaign. In my long years of association with him it always seemed his tactful management surpassed in curative efficacy all other measures.
His remedies were generally of the simplest, most rational, well chosen, and above all, consistently applied and over sufficient periods of time.
He uniformly depended upon the united efforts of all collaborators, conferring on them a measure of responsibility by deferring to their judgment, making them sharers in the credit for successful endeavour.
Thus not only were sidelights supplied on obscure problems, but no force was lost in the transmission and concentration of beneficent energetics.
He conferred an element of partnership on nurses, masseurs, clinical and laboratory assistants of various degrees; on specialists whom he freely consulted, highly esteeming the findings of experts in the sense organs, in surgery, gynecology, orthopedics, electricity, massage, remedial exercises to an extent then unheard of, and even now unsurpassed.
As newer sources of evidence came to the front he eagerly welcomed them.

He was among the very first to realize the significance of "The Pathology of the Living" (Berkeley George Andrew Moynihan, 1st Baron Moynihan KCMG, CB, FRCS, in British Medical Journal, 16 November 1907) as now furnished by modern surgeons after removal of concealing structures, and then seeing, touching and readjusting the parts below.

Thus was assembled a complete group of precise observations, reliable findings and candid opinions.

Each ally was put upon his mettle (resilience) by the flattering open mindedness of the "chief".

Mature judgments were thereby formed consonant with the facts at issue.

Doubtless master clinicians now aim to do most of these things.

Then we who worked for him constituted a unique confraternity.

Every one of us who enjoyed his confidence strove to surpass ourselves in winning his approval and in contributing to desired results.

There were times when so large and varied was the company of sufferers seeking his help that omissions must have occurred, even blunders, had he not welcomed and harmonized our best efforts.

So devoted were we to his personal interests that our vigilance and loyalty filled in many gaps and added materially to the success of the economic regime.

Dr. Mitchell was preeminent in penetration, in a knowledge of mankind on all social planes and conditions of life; in subtle appreciation of niceties of difference in mental and moral make-up; in those factors which contribute to pecularities in belief, fears, hopes, ambitions, and in solution of domestic tangles.

Above all, he had vision, instinctive awareness of complexes and of the essential needs of any invalided human being.

He was well versed, not only in physical but also in mental and moral pathology.

He likewise became an adept in unusual remedial agencies which many neurologists even now regard as beneath their attention or confidence.

For example, he himself had learned to apply Massage, various Manipulative Measures, and hence was quick to determine the capabilities of masseurs and judge the quality of their work.

He could and did teach precisely what he wished done for a particular condition.

Many neurologists declare, for example, there is little or no real value in massage. Thus they either unfairly belittle it or are incapable of appreciating its potentialities, or of directing its use.

Of course, no efficient results can follow such half-hearted measures.

Dr. Mitchell was also a master in the art of using the simple agencies, heat and cold, baths (Balneotherapy), wet packs, drip sheets and the like, showing shrewdness and originality in modifying and adapting all such physicodynamic measures to meet varying conditions. So also of a host of other remedial agencies which are too often either omitted for lack of knowledge of the principles or unfamiliarity with or unawareness of the nature of effects to be expected.

To nurses he supplied a new and liberal course of instruction in their own art; a special group of experts were thus evolved. So likewise of his clinical assistants.

We entered a novel and fascinating school of resourcefulness and art.

Upon us devolved a new and varied line of duties scarcely hinted at in the schools. We were kept busy in an ever-improving yet simplified system of reconstructive hygienic measures the purpose of which was to raise the vital index and the psyche of an individual to a higher plane than it had ever reached before; to render latent powers available; not alone to remove urgent disabilities.

In short, we were grounded in the Fundamental Principles of Therapy, viz.: to render the best kinds and qualities of joint service in our power to a sick human being." - Dr J. Madison Taylor, AB, MD, Professor of Applied Therapeutics, Temple University, Medical Department Philadelphia, in "The Pennsylvania Medical Journal", September 1918.

Let this be Considered in Relationship to Osteopathy

As a System of treating human ills, Osteopathy, We would give, is more beneficial than most measures that may be given.

Why? In any preventative or curative measure, that condition to be produced is to assist the system to gain its normal equilibrium. It is known that each organ receives impulses from other portions of the system by the suggestive forces (sympathetic nervous system) and by circulatory forces (the cerebrospinal system and the blood supply itself).

These course through the system in very close parallel activity in Every single portion of the body. Hence stimulating ganglia from which impulses arise, either sympathetically or functionally, must then be helpful in the body gaining an equilibrium.

> *"**In the presence of disease and impending death we ought to feel solemnly reminded of the obligations we owe to truth, and the greatest of all obligations, charity toward the opinions of others. Sink or swim, win or lose, God grant that we may enjoy the comfort and consolation of this heavenly grace.**" - Dr Harry Hakes, MD in "Transactions of the Luzerne County Medical Society", 1887.*

On the Subject of Sleep

"As the subject of sleep has been under discussion in your columns lately, will you permit me to make a few remarks on this physiological condition.

The idea of anaemia of the brain as a cause for the necessity for sleep, is, in my opinion, not reasonable, otherwise cats and dogs must suffer with frequent attacks of brain anaemia daily.

I think the inclination to sleep is to be accounted for by the retention of waste products from the absorption of unassimilated food, and from daily exercise, these vitiating the blood supply to the brain.

One is often consulted by patients who want to sleep too long, or not sufficiently long.

Both conditions are relieved by a free clearing out of the Emunctories, the bowels, and kidneys at the same time.

I have often in my practice found a dose of cathartics about 3 times a week enable the patient to sleep well and rid him of his imagined woes and dreams, while at the same time he has been dieted." Dr H. G. H. Naylor, MD in "The British Medical Journal", 19 June 1909.

> ***"One of the first considerations in the cure of a disease is, whether it require any evacuations. Lastly, where there is no room for any thing else, there it is the duty of a physician to exert himself as much as possible in supporting the powers of life, by strengthening the appetite and digestion, and by providing that the stools, and sleep, and every other article of health, shall approach as nearly as may be to its natural state."*** *- Dr William Heberden, MD, in "Commentaries on the History and Cure of Diseases", 1813.*

Chapter 52

Infantile Therapeutics

"Infantile Therapeutics has received as much benefit from the discovery of new properties of old medicines as from the introduction of new.

It must be continually borne in mind that we are dealing with a class of beings who require the greatest amount of knowledge, and the least amount of medicine.

Infantile therapeutics should include a thorough knowledge of hygiene, a rigid application of its rules, and the education of women in all the duties of maternity; a nursery in which fresh air, wholesome food, sunshine and exercise become the best doctors.

God's nursery for the human race is not a greenhouse, intended to force plants for an early market, but is provided with all necessary arrangements for the steady growth and development of both physical and mental qualities of the future man and woman.

The successful practitioner among children will not therefore be surprised to find that his most valuable therapeutic agents lie outside of materia medicine.

Hydrotherapy

Like the imponderable remedies above mentioned, water is entirely too common to command respect. If it could only be dealt out in small quantities at extravagant prices, with the title "Elixir of Life", we might hope for Hydrotherapy to assume the place to which it is entitled in the cure of diseases.

The position which it now occupies compared with that which it should attain, is about 1 to 8.

In some families the dread of water as a means of cure in fevers and inflammation amounts almost to hydrophobia.

I have sometimes been obliged to resort to the ruse of ordering a few grains of some saline or powder, carefully prepared at a drugstore, to be cautiously added to a tub of water, in order to secure the advantages of a bath.

The tepid pack and cold sponging in fevers, the warm pack in convulsions are my principal handmaids.

In bronchitis and pneumonia large draughts of water supply the place of expectorants, and a towel pack, protected by oil silk covering, takes the place of the poultice.

The most obstinate constipation may be overcome by the internal use of water, and in suppression of urine it is the best diuretic. There can be no doubt that infants suffer frequently from want of water, which should be administered in the interval of nursing.

There is a form of dyspepsia in infants at the breast, accompanied by gastralgia, often mistaken for colic, which has its cause in the density of the lacteal secretion

and its remedy is the administration of a little water or barley water before nursing.

I have received more thanks for the comfort that this simple suggestion has given, not only to the infant but to the disturbed household, than for any other cure.

The vapour bath for the relief of dropsy following scarlatina is best administered by means of bottles containing hot water, wrapped with wet towels placed around the patient enveloped in a blanket.

The daily bath is as important to the infant as its daily food, and the hour for its administration should be punctiliously observed.

Except in case of great debility the bath should be given by submerging the body in water at a temperature of 32°C.

In hot weather it should be given morning and evening.

The skin should be wiped dry and the body oiled with the oil of sweet almonds.

In rickets and debility, with relaxation of muscular fibre and simple atrophy, the addition of sea salt to the bath is of positive advantage.

Cold baths and cold sponging in these cases are preferable.

Restlessness and insomnia in the course of acute and chronic diseases are better controlled by the warm baths than by narcotics.

In congestion of the brain with threatened meningitis warm baths repeated every hour, and the application of the rubber coil to the head are more effectual than medication.

The itching and inflammation accompanying many diseases of the skin is best allayed by the warm bath, made alkaline by the addition of a little carbonate of soda.

In laryngismus stridulus and in true and false croup, the application of the cold pack to the throat and upper part of the chest gives immediate relief.

There is a condition in weakly children quite alarming, if not indeed dangerous, which is not a true laryngismus, but a "catch in the breath."

The cold shower bath is the cure.

In difficult dentition great relief is given by rubbing the swollen gums with a bit of ice wrapped in a napkin.

Oils and Eats

The relation which exists between the skin and the mucus membrane in the body is most intimate, not only does the vicarious action relieve the burden thrown upon the kidneys, liver, lungs and intestines, but by a proper attention to the integument, disease of the viscera may be promptly cured.

Olive oil, oil of sweet almonds are among the more elegant.

It was discovered by Trousseau that the inunction of oil would change a green ish stool to a healthy colour and consistency.

Every good groom knows that by keeping the skin of his horse in good condition they will thrive on one-half of the quantity of food.

The same rule holds good in paediatrics. Tissue growth and body heat are both dependent upon fats, and their early use in childhood is the best safeguard against consumption and wasting disease.

The inunction of fats with a view to nutrition has already been mentioned.

In scarlatina the practice of thorough inunction is productive of relief and tends to prevent the casting off of the branny scales in desquamation.

Thus used it becomes one of the most powerful means of preventing contagion.

Sea Salt

Salt is a necessary ingredient in every organ of the body. It is the secret of cell activity, of absorption of endosmosis and exosmosis. The most cruel punishment ever inflicted upon a human being would be to deprive him of salt.

The craving necessary for this mineral among the herbivora is best illustrated by the numerous "licks" to which the herds of buffalo and bison make their lengthy pilgrimages.

The infant at the breast derives its supply from the mother's diet, but the vast numbers of foundlings who perish annually in the process of artificial feeding succumb to the slow marasmus, due to the lack of salt in their food.

I have saved scores of these cases of simple atrophy and tabes mesenteries by the liberal use of salt in their food, diarrhoea is checked and digestion and assimilation be gins.

I have learned that successful veterinary physicians use salt as the most reliable treatment for the "scours" in young cattle.

Also in those distressing cases of chronic enteritis presented in the early autumn as a result of necroses of the intestinal follicles, a diet of scraped raw beef with salt is almost immediately successful.

Cod Liver Oil

This well-known reconstructive and alterative deserves especial mention in infantile therapeutics. To restrict its uses to the cure of pulmonary disease and tuberculosis is to limit its usefulness. No better agent exists for the improvement in nutrition so essential in convalesence from acute and chronic diseases.

Castor Oil

"There can be no doubt that the frequent use of this drug in domestic medicine lessens the business of the doctor to a consider able extent.

It is not only a safe purgative but also possesses sufficient narcotic properties to secure rest.

In coryza with cerebral congestion and earache, a single dose of castor oil often acts like a charm. Most of the alarming illnesses of infants are reflexes of intestinal irritation, and a dose of castor oil removes the cause.

No better agent can be kept in the nursery than an emulsion of castor oil.

Emetics and Cathartics

The files of our drugstores are conspicuous for the absence of emetics.

The therapeutic value of emesis in childhood is very great, not only for the relief of indigestion, but also as an initial treatment of many diseases, prominent among which may be mentioned tonsillitis, intermittent and remittent fevers and the exanthemata.

Calcium

That lime is a necessary constituent of the bony skeleton is universally known. The importance of its presence in other parts of the economy is not sufficiently appreciated.

Ringer states that without lime there would be no cardiac construction. Lime water as an addition to food of artificially-fed infants is a necessity.

The care with which a teaspoonful is commonly added to a bottle of milk is quite amusing, when it is taken into consideration that there is little more than one-half grain to the ounce.

It should be added in the proportion of 1/3 or 1/2 portion of the food.

In enlarged bronchial glands, the result of whooping-cough, and the pathological condition of bronchial phthisis, as well as in glands chronically enlarged from struma I have had most delightful results from the chloride of calcium." - Dr John A. Larrabee, MD Professor of Materia Medica and Therapeutics in "The Medical Standard". Vol.5-6, 1889.

The Role of Nutrition

"In infants with diarrhoea, fever due to various infections, or acute intestinal intoxication, there is a derangement of the carbohydrate metabolism not primarily associated with a deficient production of insulin." - Dr Frederick F. Tisdall, MD, Dr T. G. H. Drake, MD, Dr Alan Brown, MD, in "The carbohydrate metabolism of infants with diarrhea, infection and acute intoxication", Archives of Pediatrics and Adolescent Medicine, December 1925.

Chapter 53

The Effects of Remedies Upon the Emunctories

"One of the roles of useful remedies, is its ability to assist the Emunctories in their natural function. To remove impurities, toxicity from the circulation system." - Rui Alexandre Gabirro

Simples and Tisanes

"No English practitioner who has followed his profession on the continent can fail to have been struck by the extensive use made of popular medicinal herbs as adjuvants to medical treatment properly so called.

In England the preparation of infusions, decoctions, extracts, and liniments of herbs is now handed over to the manufacturing chemist, but there is a wide difference between the diuretic action of acetate or citrate of potash with infusion of Buchu in the ordinary 6 oz. mixture and that of the same salt administered by the French method in a cupful of hot, freshly-prepared infusion, or the expectorant qualities of oxymel of Squills and Ipecacuanha given in a hot infusion of Linseed and Liquorice.

From the time of Hippocrates the value of the ingestion of hot water in the treatment of febrile affections has been recognized and the prescription of herbal infusions and decoctions is, in the main, only a device for the purpose of inducing the patient to swallow the hot liquid, just as antisepsis is in great measure a device for securing cleanliness.

Not one French patient in a dozen could be persuaded to drink a quart of hot water in the 24 hours, but if it be provided in the form of a herbal infusion, duly flavoured and sweetened, no difficulty is experienced.

In the whole realm of medicinal nature there is no more active salutary diuretic and diaphoretic than hot water, and the physiological action of the latter is free from any drawback, whereas that of powerful drugs such as nitre, pilocarpine, sparteine, and the like, is often attended by injurious collateral effects.

The absorption of the hot liquid and its free evacuation by the Emunctories is a form of lavage of the tissues, stimulating metabolism and ridding the organism of microbial toxins and organic waste products.

The French pharmacopoeia contains up wards of 200 tisanes, and no scheme of treatment is thought complete unless it provides for the ingestion of an adequate quantity of tisane.

Instead of ordering "mist, alb.", the French doctor administers some Epsom salts or sodium sulphate in a hot infusion of senna, camomile, vervain,

peppermint, or limeflower, with, on the whole, much more satisfactory results.

In many parts of England a decoction of poppy heads and camomile is commonly employed as a fomentation for injured limbs, and its first aid use is cordially recommended by the doctors, since if it does nothing more it secures cleanliness of skin.

Let, us then, administer the bromides in a fresh infusion of valerian; nitre or ammonium acetate in a hot infusion of marsh mallow, couch grass, or pellitory; expectorants in a decoction of tussilage, pine buds, or serpentary; and a diuretic of potassium acetate in an infusion of elder flowers, saponaria, or borage.

A cupful of hot vervain or camomile after dinner is an excellent carminative and facilitates digestion, and there are still people who like these draughts.

Our professional forefathers were adepts in this matter, and in mediaeval art the physician was usually represented scanning a sample of urine or culling herbs:

Excellent herbs had our fathers of old,
Excellent herbs to ease their pain -
Alexanders and marigold,
Eyebright, orris and elecampane,
Basil, rocket, valerian, rue
(Almost singing themselves they run),
Vervain, dittany, "call-me-to-you"
Cowslip, melilot, rose-of-the-sun; Anything green that grew out of the mould Was an excellent herb to our fathers of old."

- in "The British Medical Journal", 26 February 1916.

On the function of Medicines upon the Emunctory activities

"When disease seizes the frame, those medicines only should be used which most readily and safely act upon the various organs, removing obstructions, and promoting perspiration, you thus give nature a chance of throwing off all the impurities of the system by her 3 channels: Intestines, Kidneys and Pores of the Skin.

You by this means restore likewise the digestive organs to their proper play, and heat and action to the system.

This is unquestionably the best mode.

To be fully persuaded concerning the laws of the animal economy is the first grand point before the nature of diseases can be understood, there being, as I stated before, but one grand moving cause of disease.

Hippocrates, the father of physicians, observed that all diseases resemble each other in form, invasion, march, and decline.

Dr. Thatcher contended that all diseases arose from obstructed perspiration.

Health, "says Harvey", is a free circulation of the blood how necessary then that the crimson fluid should never be impregnated with any deleterious mixture, and that water should be our only beverage to keep up the requisite steam". - Albert Isaiah Coffin, MD in "Medical botany a course of lectures delivered at Sussex Hall", 1850.

Remedies their Nature and Action Upon the Body

There are 2 types of useful remedies:

1. Those who aid the Emunctories
2. Those who give a shock, to a certain body system; such as the nerve system, or to an organ such as the heart (for example Digitalis that acts upon the heart as to produce shock).

Role of Pharmacology Materia Medica in Emunctology

Remedies are all those natural substances which aid the body system, either by providing that which is lacking or by aiding the body systems to function in a particular way or manner by means of an active principle that triggers a body part or body system response in the desired direction, in which is needed.

Remedies can be any thing from sunlight to water, to a piece of food such as fruit or vegetables, ocean fish or seafood, or animal products.

An Example of Remedies are:

Sea Salt
Water
Calcium Carbonate
Epsom Salt
Enzymes
Vitamins
Olive Oil
Castor Oil
Peanut Oil
Iodine
High Value Medicinal Plants

These should be administered, according to the capacity, of each particular body for the assimilation of same.

Chapter 54

Blood Circulation

"The system of the circulation consists of 2 distinct sets of organs, namely:

1. Blood Vessels, which contain the nutritive fluid.
2. Heart, the great centre of the force by which chiefly it is propelled into the different parts of the body.

The blood is conveyed from the heart by vessels termed arteries.

This system begins by one great vessel attached to the heart, called the aorta.

The blood is returned to the heart by vessels termed the veins. In their structure and properties there are important differences between these 2 systems.

The coats of arteries are more thick; and so elastic, that the tubes retain their round shape when empty.

The coats of veins are thin, and so pliable, that they collapse as soon as their contents are discharged.

The arteries divide and subdivide into ramifications of extreme minuteness; ultimately they become so small, as entirely to escape our senses.

The minute branches are termed the capillaries.

The capillaries, gradually joining each other, and becoming larger and larger as they unite, terminate in the roots of the other systems of vessels, that is, in the minute branches of veins.

The veins uniting with each other, and returning the blood from all parts of the body, at length terminate in two great vessels, called the venae cavae.

These pour the blood directly into the heart. In all parts of the body except the lungs, the veins exceed the arteries, both in number and size; consequently, in this division of the system, the motion of the blood is proportionally slower.

It is established by the structure and disposition of the valves.

The blood can flow in one direction, but in no other; the position and action of the valves prevent the possibility of its taking any course but one.

The effect of ligatures shows the direction in which the blood flows.

If a ligature be placed around an artery, the portion of the artery between the heart and the ligature becomes tumid; that portion of it which is below the ligature becomes empty.

On the contrary, if a ligature be placed around a vein, the portion of the vein which is between the heart and the ligature becomes collapsed; that portion of it which is between the ligature and the extremity becomes swollen.

The inference can be but one; that in the artery the blood flows from the heart; that in the vein it flows to the heart.

The Composition of the Blood

The blood, as it is found in the circulating vessels, contains every element of which the animal body is composed; namely, carbon, hydrogen, oxygen, and azote, together with the different compounds formed by the various combination of these elements, such as fibrine, gelatine, albumen, and so on; and almost every chemical substance which is found in the body; as phosphorus, lime, iron, and so on.

In this heterogeneous composition of the blood, it was observed, we see the material out of which it is possible for the different animal solids and fluids, numerous and varied as they are, to be elaborated; and in the varied disposition of the vessels which contain the fluid, we perceive the first steps of the preparation which is made for the operation of this subtle and mysterious chemistry.

The absorbent vessels establishing the communication between the digestive organs and the circulating system, or, in other words, forming the channels by which the nutritive matter destined to renovate the blood is conveyed into this fluid; it was stated, that in the more perfect animals these vessels consist of two distinct sets.

The first, on account of the colour of the fluid they contain, which is similar to that of milk, are termed lacteal vessels.

These receive the nutriment vessels directly from the intestines.

Gradually becoming larger and larger, by constantly uniting together in their progress to the venous system, they at length form one trunk, which, from its passing through the thorax, is called the thoracic duct.

The other set, also named from the colour of the fluid they contain, which is pellucid like lymph, are therefore termed lymphatic vessels.

These arise from every part of the body, and re-convey into the blood the remnant of the nutrient particles which have not been expended in the reparation of the system, together with the new substances which have been absorbed from the different surfaces of the body.

These also terminate in the thoracic duct.

The thoracic duct itself opens into a large vein near the right side of the heart, that side by which the blood flows into the lungs, consequently the new matter furnished to the blood by the process of digestion passes, with this fluid, directly through the lungs: in this organ it is assimilated, that is, converted into perfect blood; and from this great laboratory, in which its complete preparation is effected, the nutritive fluid is returned to the left side of the heart, thence to be sent out to the system in general.

The blood when it leaves the left side of the heart is of a bright red colour.

A remarkable change takes place in its appearance during its circulation through the body.

When it returns to the right side of the heart, it is of a dark mulberry colour.

Hence the blood contained in the artery, and therefore termed arterial, is said to be red; that contained in the vein, or venous, is called black.

Black or venous blood is found to be unfit for the purposes of life; its power to repair the waste of the system, and to afford the necessary stimulus to the action of the different organs, is exhausted.

To accomplish its renovation, it is necessary that a particular process should be established; that process is denominated respiration.

It seems to be essential to the life of every organized body that its nutrient matter, whatever it be, should be brought into contact with the air.

Even in the vegetable, this is indispensable. The entire surface of the tissue of which the animal is composed, appears to be a respiratory organ.

As we ascend in the scale, special means are provided for the conveyance of air, either to particular parts of the body, or throughout its whole surface.

The object and the result of these different arrangements are precisely the same; by both, the blood and the air are brought, not into immediate contact, but so near to each other, that nothing intervenes between them, excepting an exceedingly thin membrane, which presents no obstacle to their reciprocal action.

The blood when it entered the lungs was of a black or venous colour; it had distributed to the system its nutrient particles; it was no longer capable of affording it the requisite degree of nourishment.

After having been subjected to the action of respiration in the lungs, it flows into the vessels destined to receive it, of a bright red colour: it is now arterial blood: it is renovated; it is refitted to supply the wants of the system." - Dr Southwood Smith, MD in "Comparative and Human Physiology", The London Magazine, Vol.7, 1827.

Blood Pressure

"To understand blood pressure fully let's recall that the blood travels in a circle, completing the circuit in man in about 20 seconds. The blood is driven out of the heart into the arteries by contractions of the ventricles of the heart.

With each systole of the heart the arterial walls are stretched. After the completion of systole (diastole), the blood is driven onward in the arteries and into the capillaries by the elastic recoil of the arterial walls.

The blood exercises pressure upon the walls of the vessels containing it, the blood is forcibly injected into the arteries with each systole; the vessels are already full of blood; the arteries are highly distensible and stretch to accommodate the extra amount of blood forced into them; a distinct resistance is met between the arteries and veins by the minute arterioles and capillaries.

The sectional area of the capillaries is several hundred times that of the aorta and the friction generated by the passage of the blood through these minute channels opposes a considerable hindrance or resistance in its course.

This resistance is known as peripheral resistance.

The sum of all these factors, the propelling force of the heart, the volume and viscosity of the blood, the elasticity of the arteries and the resistance in the arterioles and capillaries, determines the amount of arterial tension.

The general or local flow of blood depends largely upon the relation between the heart's action and the peripheral resistance.

The regulation of the amount of resistance to the passage of blood at the periphery is principally done by alteration of the calibre of the arterioles.

Normally the tone of an artery is maintained by the nervous system at about midway between extreme contraction and extreme dilatation.

Blood pressure varies greatly in different parts of the body. It is greater during systole than during diastole and is greatest in the ventricle and aorta near the heart and gradually diminishes toward the vessels more remote from the heart.

In the veins it is nowhere great and changes but little in systole and in diastole.

In the large veins near the heart the pressure becomes negative, suction rather than pressure. All the factors upon which blood pressure depends vary constantly but are so combined that the general arterial pressure remains fairly constant.

The blood pressure may be increased by increased force or frequency of the heart but this action is almost certainly followed by a diminished peripheral resistance. By this means the two altered conditions may balance and the blood pressure remain as it was before the heart began to beat more rapidly or more forcibly. Under pathological conditions this power of compensation may be lost, and hypertension or hypotension follow.

This alteration will be transient or permanent depending upon whether the pathological condition is temporary or permanent.

All instruments measure the maximum and minimum endovascular pressure but none of them measure the mass movement of the blood. There may be times when the systolic and diastolic pressures are normal and at the same time a marked stasis in the blood stream may exist.

This is a very important feature which we must entirely neglect because of the lack of proper instruments.

The sphygmomanometers most commonly used consist of a pneumatic cuff which is applied to the arm above the elbow, with a tube leading from this cuff to a column of mercury, in one type, and to a dial in the other type.

The pneumatic cuff is inflated so that it entirely obliterates the pulse in the forearm. The air is then allowed to escape until the blood is just permitted to pass through the constriction caused by the inflated cuff.

At the first appearance of the pulse at the wrist a reading is made which gives the systolic or maximum pressure.

More air is then permitted to escape until the movement up and down of the mercury suddenly becomes less or the hand of the dial reaches its greatest excursion and a second reading is made.

This gives the diastolic or minimum pressure.

A distinct improvement was made by Korotkoff in 1905 on this method of using the sphygmomanometerb y placing the bowl of a stethoscope below the cuff and exactly in the bend of the elbow and by listening for different sounds which appear. These sounds mark off 5 distinct phases, the first and last representing the systolic and diastolic pressures.

The chief advantage of this auscultatory method is that the sense of hearing is substituted for the somewhat more fallible tactile sense.

This method gives greater simplicity, ease and rapidity as well as greater precision and causes less disturbance to the patient than the slower methods which involve a longer compression with the armlet.

It is only by the complete picture that we are able to determine the cardiac efficiency, the heart load and the pathogenesis of the various kinds of deviations from the normal blood-pressure. Repeated observations should be made and only those pressures which remain constantly above or below the normal should be considered hypertension or hypotension.

Blood-pressure varies greatly in different individuals and in the same individual under varying conditions. It is usually higher at night than in the morning, higher in the vertical position than in the sitting and higher in the sitting position than in the horizontal.

It is affected by food, emotion, exercise and temperature. Extreme temperatures in bathing cause first a transient rise which is soon followed by a reduction in blood-pressure. Temperature of about 35 C. will be followed by a secondary rise in blood-pressure

In persons of a very nervous type, who are under the strain of overwork, worry and the like it may run up the point to 160, 170, 180 or even more. Here we have the Toxemia associated with fatigue.

These cases respond to the ordinary hygienic measures and do not necessarily mean disease. In arteriosclerosis and in nephritis we have a compensatory rise of blood-pressure.

With a continued systolic pressure of over 200 mm. mercury, there is always found some form of nephritis. In chronic interstitial nephritis a persistently high (160 to 250 mm.), systolic blood-pressure and a low diastolic pressure may be recognized before the urinary findings are present.

Blood-pressure is not materially increased in the parenchymatous type of nephritis. In every rise in blood-pressure we should determine, if possible, how much is due to intestinal toxemia and eliminate this if possible; then we should determine whether the remaining rise is cardiac or nephritic.

We must also know whether there is any atheroma present.

We can then be better able to decide whether the pressure should be lowered and how much is safe. We have on the one hand the danger of hemiphlegia, if any atheroma be present and, if the pressure is lowered below the compensatory point, the danger of uremia or the loss of cardiac compensation.

Conditions other than disease influencing blood-pressure

Blood-pressure may be elevated by many drugs and by mechanical measures.

The elevation may be either general or local, transient or lasting.

The modus operandi of a general rise in blood-pressure may be through influence upon the rate or force of the heart by an increase in peripheral resistance

through vaso-constriction or by a combination of both methods or by an increase in the volume of the vascular contents due to the introduction of normal saline solution.

Local rise in blood-pressure may be produced by forcing the blood from the peripheral vessels to the central arteries by the pneumatic jacket or by lowering the head and shoulders in shock.

The opposite to the above will result in a lowered blood-pressure through the influence of: Cardiac Depression, Vascular Dilatation, Venesection, Autocondensation Current, Rest, Baths, and the Elimination of Causes.

Influence of Disease upon Blood-Pressure

Many diseased conditions directly or indirectly influence the blood-pressure.

Some cause a rise (hypertension), others a fall (hypotension).

This effect may be transient or permanent. Under the terms hypertension or hypotension should be considered only the alteration in which the blood-pressure remains constantly above or below the normal blood-pressure.

Hypertension may occur in such conditions as:

Eclampsia, Cerebral Haemorrhage, Lead-Poisoning, Acute Vascular Affections, Intestinal Toxemia and Diabetes.

The more lasting or permanent rise in blood-pressure depends upon 2 factors: Bright's Disease and Arteriosclerosis.

High tension is usually associated with cardio-vascular-renal disease but there may be high tension without signs of either arterial or renal disease.

This is met in keen business men and is thought to be due to excessive adrenalin secretion.

> *"**Increasing blood-pressure is the most constant symptom of** gestational **Toxemia** in the latter half of pregnancy and is an invariable precursor of eclampsia." - Hirst*

The first symptom of hypertension is a rise in the arterial and capillary tension.

Later the heart beats become violent, the second aortic sound becomes ringing and the radial pulse hard. A white line made by the nail upon the cutaneous surface disappears in a few seconds. Hypotension, as in case of hypertension, may be either transient or lasting. It is present in most infectious diseases, in tuberculosis, in some acute cardio-vascular affections, in myocarditis, chronic pericardial affections, in many forms of poisoning, in exophthalmic goiter, in Addison's disease and in diminished secretion of the posterior lobe of the pituitary. It is a constant symptom in many relaxing disturbances as neurasthenia, chronic visceral disease, persistent vomiting, purging or hemorrhage and in malnutrition. In Addison's disease the pressure may fall as low as 70 or 80 mm. of mercury. The symptoms of hypotension are usually blended with those of the associated condition. There is usually cyanosis and coldness of the extremities from sluggish peripheral circulation.

The pulse is small and usually rapid.

The white line made on the skin with the nail remains for a long time.

There may be amaurosis without changes in the fundus of the eye; progressive changes in vision which follow the variations in the arterial tension; hypophoria, transient aphonia, suddenly appearing and disappearing, vertigo, general fatigue, perspiration of the hands and feet, associated with any nervous excitement or emotions.

There may also be the associated symptoms of cardiac weakness, edema, passive congestion of the liver and oliguria.

Relation of Internal Secretions to Arterial Tension

Both hypertension and hypotension are usually due to peripheral vaso-constriction or vaso-dilatation, which may follow true lesions or spasmodic troubles or may be the result of toxic or mechanical phenomena.

A very important role is played by the sympathetic nerves.

There are many cases, however, where we must seek further for the cause and this will be found in some alteration of function of the glands of internal secretion.

Changes have been found in the suprarenal glands which have led many to regard hypertension as a manifestation of hypersecretion of these glands.

Cases of hypertension are now fairly well recognized which follow overactivity of the pituitary gland.

The pathogenesis of the hypotension in Addison's disease is proof of the insufficiency of the suprarenal secretion. It is possible that a similar insufficiency of the adrenals exists from other causes.

Blood pressure can be artificially raised by the introduction of adrenalin, pituitrin and also from substances extracted from putrid meat showing the possibility of such causes in some cases.

Injections of adrenalin in animals have caused glycosuria and also a form of arteriosclerosis probably due to high blood-pressure.

There is much evidence to the contrary but it is rather generally accepted that adrenalin secretion has exclusively a pressor-effect on vascular tension.

The persistent rise in blood-pressure, seen in advanced age, seems to be directly due to the adrenals. The thyroids and adrenals show lessened activity in advanced life and it is thought that the functional degeneration of the thyroid is more rapid than that of the adrenals.

It is also recognized that a functional or permanent degeneration of the pituitary will result in hypotension.

High blood-pressure in cases of obesity which show no evidence of cardiac or renal disturbances and which do not respond to dietetic measures seems to be directly attributable to disturbances of internal secretion.

In conclusion, blood-pressure determinations should be a part of every examination. In this way many cases of hemiplegia or uremia will be averted.

Many cases of eclampsia will be recognized early and many cases of beginning

cardiac failure will be discovered while there is still a chance of recovery." - Dr Charles Clyde Sutter, MD, in "The American Journal of Nursing", Vol.15, Oct., 1914.

"The blood pressure should be watched and, as far as possible, controlled by dietetic and general hygienic measures. The effect of intestinal toxemia upon blood pressure was proven by Dale who caused a rise of from 110 mm. to 260 mm. pressure by the intravenous injection of parahydroxyphenyl-ethyl-amine. This substance is very similar in chemical composition to the active principle to adrenalin and was isolated by Beyer from putrid meat." - Dr Charles Clyde Sutter, MD in "New York State Journal of Medicine", Vol.14, Sept., 1914.

High Arterial Blood Pressure and Treatment

"Hypertension may exist for an indefinite period without arteriosclerosis, and then it is due to spasm of the arterioles. As a rule arteriosclerosis sooner or later follows, but even then the relation between them is not constant. Hypertension is not present in all arteriosclerotic cases at the time when they are first seen, probably in not more than 2/3 of them, leaving it imperative that an otherwise detailed examination be made of every patient and so not rely upon blood pressure alone.

Causes for Continued Increase in Blood Pressure are multiple:

1. Toxaemia.
2. Obstruction offered by sclerosis of the splanchnic vessels, or the aorta leading to them.
3. Reflex arteriole contraction may occur to some extent, as in intracranial pressure: especially upon the medulla, granular kidney, etc.

(though these cases may be largely toxic rather than reflex or compensatory).

And occasionally increased heart action due to local abnormalities as in early valvular aneurism. Of these causes toxaemia alone is highly important, and covers nearly all cases.

Arteriosclerosis may be caused by:

1. Toxaemia.
2. Continued High Blood Pressure.
3. General Malnutrition as illustrated in the involutionary period (no doubt toxic, due to suboxidation).

Of these causes, Hypertension largely predominates. So much for the causal relation between hypertension and arteriosclerosis, in which toxic agencies are the chief cause of hypertension, and the latter in turn the principal factor in the development of arteriosclerosis.

The Relation Between Toxaemia and Hypertension And Between Hypertension and Arteriosclerosis

Toxaemia arises from many causes and produces its effects upon the circulation in some cases by direct action on the muscle plates of the heart and arteries.

Other substances act through the nervous system.

While a number of drugs and bacterial toxins (including the bacillus coli) are known to produce a rise in arterial pressure, they cause spasmodic contraction of the arterioles.

Clinically, it is certain that hypertension is nearly always present in cases exhibiting gastro-intestinal toxaemia of subacute or chronic type, and a sudden increase in tension usually occurs with an acute attack of such intoxication.

It is, much less common to find considerable elevation in blood pressure accompanying gastric disturbances than in colonic toxaemia (with indol, skatol, and toxic albumoses), where hepatic incompetency sooner or later occurs.

Conversely, it is true that hypertension is usually accompanied by toxaemia resulting from digestive derangements, as shown by chemical and bacterial examination.

Some cases of hypertension do not show existence of gastro-intestinal toxaemia, but instead a morbid metabolism only.

For example, gout, in which the purin bodies, derived from nuclein, fail to be completely converted into urea.

This faulty fermentation and sub-oxidation results in the formation of certain undefined toxic bodies, accompanying the production of uric acid and the urates, which latter substances are quite inert.

Also diabetes falls under the metabolic heading.

The relation existing between these metabolic disturbances and a pre-existing alimentary toxaemia are an important one, these conditions are usually associated, with hypertension and their marked stages are preceded by it.

Substances other than bacterial toxines occasionally give rise to prolonged and injurious hypertension.

So, also, may it be that the different internal secretions produce hypertension, either by some direct action or indirectly through disturbing digestion and assimilation or metabolism. An increase in arterial blood pressure resulting from acute toxaemia promptly subsides upon relief of the cause.

The Relation Between Hypertension and Arteriosclerosis

That the former produces the latter is well recognized; also, that it frequently takes place without any primary injury or inflammation (no endarteritis).

It develops along the lines of physiological stimulation and strain, giving rise to fibrosis, In this way nature endeavours to make up for the gradual decrease of muscle and elastic tissue resulting from their inactivity and continued stretching.

A common form described by Adami proceeds by a localized bulging outward of the media, especially at the points weakened by branch arteries, taking on a form of fatty degeneration.

The intima being better nourished, endeavours to compensate for this loss of support by an overgrowth of this fibrous tissue.

This process is usually brought about as follows:

1. The normal intima and inner layer of the media contain no nutrient vessels, being nourished directly by the main blood stream, (the same is true in the early stages of fibrosis).
2. As the condition progresses, multiplication of the fibrous tissue layers takes place between the inner and outer zones of the intima, completely filling the area of distension, until the central portion of this fibrous growth, becoming poorly nourished, begins to degenerate.
3. If the condition continues to progress, calcareous deposits may take place in the necrosed areas of the media and intima.
4. The results:
   a. Cerebral Hemorrhage,
   b. Chronic Interstitial Nephritis,
   c. Cardiac Failure, etc., are too well known to call for comment.

Treatment

The cause of hypertension will usually be found in connection with alimentary disturbances, giving rise to toxines.

Under such circumstances appropriate measures must be followed for the thorough clearing out of the tract, as by Castor Oil, Cascara, etc., Colonic Irrigations as called for, attention to the stomach and liver, flushing with water, correction of diet as indicated, usually reduction or temporary withdrawal of foods containing the purin bodies, and all bacterial culture media; at the same time supplying large quantities of the green vegetables and fruits.

Regulate Hygienic Conditions in General

The positive and useful course of procedure, which is capable not alone of tiding a life over a crisis, depends upon the thorough establishment of normal

elimination with maintained oxidation and metabolism. Combined with Dietetic and Hygienic care, such treatment gives most satisfactory results.

It produces no depression, but tone.

It reduces tension to the desirable degree, and it remains there in all except very advanced cases or in subjects who disregard precaution.

The oxidation is increased and maintained, the elimination established and continued, and as a result the alimentary toxines need not re-accumulate.

Cardiac symptoms of pain, dyspnoea, lividity or pallor, and physical signs of insufficiency disappear and remain absent.

On the whole, such treatment is as gratifying as any in practice." - Dr Byron Sprague Price, MD, CM, in "Journal of Advanced Therapeutics", Sept. 1911.

Chapter 55

Observations on the Relation of the Gastro-Intestinal Tract to Nervous and Mental Diseases

"You are all doubtless familiar with the investigations of Bouchard, Vaughan, Novy and Herter, and many others, on the subject "auto-intoxication".

This field opens up enormous possibilities.

For your complete understanding, it would seem to me to be advisable first to refer to the physiology of digestion.

There are certain inorganic ferments contained in the bile, saliva, gastric juice, pancreatic juice and intestinal juice, which are a part of the human organism at birth. There are furthermore many organic ferments which are immediately acquired after birth, and which play an important part both in the physiology and in the pathology of the gastro-intestinal tract.

At birth, this tract is sterile, as is confirmed by examination of the meconium. It is first infected in the new-born infant by the swallowing of air, and then with the bacteria of the food and the saliva.

The faeces of the adult and nursling contain bacteria to the extent of approximately 1/4 to 1/3 of the dried weight of the excretion—which would sum total many millions.

With normal digestion, fermentation of the carbohydrates in the small intestines is produced by the micro-organisms therein to a physiological degree, the organic acids, lactic and acetic, the derivatives of such fermentation, acting as a stimulus to normal peristalsis.

These acids prevent the putrefaction of albuminates within the small intestines, and partly check the decomposition of the carbohydrates. The putrefaction of the albuminates physiologically takes place in the large intestine, the contents have an alkaline reaction. Here are developed skatol, which gives the odor to the feces, indol, phenol and various gases, and the other products of putrefaction.

The Bacillus coli communis is believed to be an important factor in these putrefactive processes, and the production of indol depends largely on the activity.

It is not a product of pancreatic fermentation as was formerly supposed.

In this viscus also, a small proportion of fat is decomposed into glycerin and fatty acids, by the bacteria.

When carbohydrates are present, as well as proteids, the colon bacilli ferment the carbohydrates first, and no indol is manufactured until this is nearly completed.

Undoubtedly, putrefactive bacteria of various types are at all times present in the stomach and small intestines, but their activity is inhibited, until conditions favourable to their development arise.

Thus normal fermentation of carbohydrates in the small intestine has this effect.

The first inorganic ferment which we find, is in the saliva, and this acts for the transformation of the carbohydrates. **We must remember that proper mastication of the food, and care of the teeth, all have an important bearing on digestion.**

Acid fermentation in the mouth interferes with the action of the saliva, and, moreover, it has been demonstrated, that cleansing the mouths of nursing infants will, alone, diminish fermentative processes in the gastro-intestinal tract.

In the stomach we have the combined action of hydrochloric acid and the ferment pepsin on the proteids; the rennet ferment curdles milk and unless excessive hyperacidity be present, further fermentation changes occur in the sugars. Be sides this, a small percentage of the fats is split into fatty acids.

Meltzer has demonstrated that only a small quantity of water is absorbed from the stomach.

Excessive hydrochloric acid, more over, checks further changes in the sugars.

The motor functions of the stomach and intestines are of great importance.

A small meal, will pass through the stomach in about 2 hours; and at the end of this time, under normal conditions, only a small amount of gastric juice can be aspirated. About the same period of time, 2 hours, is consumed in the passage through the small intestines, and for about 20 hours, the final products remain in the large intestine before expulsion from the anus.

Normal peristaltic action of the stomach and intestines are, therefore, most important factors in the prevention of abnormal fermentation or putrefaction.

With atony (lost muscle strength) of the stomach we have as a result motor insufficiency and stasis. It has been demonstrated that the presence of free hydrochloric acid, even in considerable quantities, does not prevent gaseous fermentation or putrefaction, if stasis be present.

Simple atony of the stomach will often progress to chronic dilatation, and, in fact, I believe it to be a frequent course, if left untreated. **With this dilatation, there may be increased fermentation or putrefaction. Butyric acid may be produced.**

This acid has a distinctly depressive effect on the central nervous system.

Together with lactic and acetic acids, its presence indicates gastric stagnation, destruction of glandular elements by malignant or other disease, putrefaction or fermentation. **Butyric acid is classified among substances acting as autotoxins.**

Hydrogen sulphide (H_2S) at times is found in dilated stomachs, together with other gases, the absorption of which cause toxemic symptoms.

Dr Wm. H. Thomson, holds that gastro-intestinal toxemia is the cause of this disease, and describes 28 symptoms occurring in cases both with and without goiter:

"I have arranged the characteristic symptoms of Graves Disease under the following 28 heads, irrespective of goitre and exophthalmos.

A larger or more varied list of special and distinguishing signs certainly can hardly be paralleled in any other specific disease.

The distinctly characteristic symptoms of Graves Disease, aside from goitre and exophthalmos, are as follows:

1. Tachycardia.
2. Palpitation.
3. Nervousness.
4. Muscular tremors, general and special.
5. Pareses:
   a) General muscular weakness;
   b) Local weakness of the knees;
   c) Of the voice;
   d) Abasia (inability to walk);
   e) Aphasia (impairment of language).
6. Local paralyses.
7. Mental symptoms:
   a) Depression;
   b) Changes of disposition;
   c) Mania.
8. Special affections of the ears.
9. Special affections of the eyes.
10. Affections of smell.
11. Pains:
    a) General;
    b) Localized in neck, finger tips, toes, heels, and in external ears;
    c) Muscular pains.
12. Headaches.
13. Vertigo.
14. Paraesthesia.
15. Characteristic disorders of the Stomach.
16. Characteristic disorders of the Intestines.
17. Bulimia.
18. Emaciation.
19. Insomnia.
20. Loss of hair.
21. Pigmentation of the skin.
22. Itching.
23. Sweating.
24. Vesical irritability.
25. All symptoms worse in the morning.
26. Disease chronic.
27. Family complaint.
28. Death sudden, from syncope.

A further clinical fact should be emphasized, namely:

That the majority of these symptoms, whether motor, sensory or nutritive, are peculiar in the forms which they assume in Graves." - Dr William Hanna Thomson, MD in "Graves Disease with and Without Exophthalmic Goitre", 1904.

Curiously enough, ethylidenediamin, a ptomain found at times by Kulneff, in the liquids of the stomach, in dilatation of that organ, when injected into mice and guinea-pigs, will produce exophthalmos and some symptoms found in Graves' disease. This is of interest, and certainly suggestive.

Mold in the stomach, hypoacidity, anacidity, chronic gastritis and achylia gastrica, may be found in dilatation of the stomach.

It can thus be readily understood, how perversions of the gastric digestion may be a marked causative factor in the production of additional disturbances in the intestinal tract below, and be productive of excessive fermentation, or of putrefaction.

A careful examination of the secretions and motor functions of the stomach is, therefore, one of the first requisites for scientific research into auto-infection from the gastro-intestinal tract.

Under normal conditions, when the chyme enters the small intestine, its reaction is acid, due to the hydrochloric acid contained therein. The bile is one of the chief factors in gradually altering this reaction to neutral or alkaline.

It strongly supplements the action of the pancreatic juice in emulsifying fats and its absence, or diminution lessens this function. It, further more, precipitates the pepsin from the chyme, and allows it to be the more readily absorbed.

Some consider that it has anti fermentative and antiputrefactive powers, and that it helps maintain the nutrition of the epithelial cells.

The bile exercises a distinct effect on the peristalsis of the intestines and certain noxious products are by it eliminated from the body.

The pancreatic juice contains an amylolvtic ferment, a lipolytic ferment and a proteolytic ferment, with which all are familiar. They act in a neutral or alkaline medium, though small quantities of acetic or lactic acid seem to favour their activity. The organic ferments, existing in the small intestine, aid in the production of these acids. According to Ewald, prolonged action, of the pancreatic juice may produce hypoxanthin, but more probably it is due to excessive putrefaction.

(Methyl guanidin results from the oxidation of creatin and creatinin and it illustrates how a comparatively non-poisonous substance may be changed into a violent poison by bacterial action. On injection of this substance into guinea-pigs there appear fibrillary twitchings, rapid respiration, dilatation of the pupil, dyspnea, labored breathing and clonic convulsions.

All these phenomena are suggestive of epileptiform attacks.

Creatin is found in muscle; creatinin, a derivative, is also derived from meat taken as food and appears normally in the urine. It is increased by meat diet, in diabetes, various fevers, such as typhoid, etc., and is diminished by anemia, etc.)

Methyl guanidin results therefore from putrefactive processes in the small intestine and probably from the large intestine as well. This is a leucomain, which causes increased nervous irritability and tetanic convulsions, a fact of interest.

During the process of normal amylolytic fermentation, organic acids are given off which are an aid to stimulating intestinal peristalsis, and these acids are of service in checking putrefaction.

Peristalsis of the intestine also renders putrefactive changes less likely.

Stasis of the intestine is an aid to putrefaction, just as is motor insufficiency in the stomach.

Butyric acid and hydrogen sulphide are autotoxins, which may also be produced in the small intestines.

The intestinal juice is claimed to augment the activity of the pancreatic ferments, according to Pavlov, and to help neutralize some of the acids formed by the fermentation of the carbohydrates.

The reaction in the lower jejunum and ileum is acid.

When the intestinal contents pass into the colon, fermentation stops, and putrefaction begins, and the faecal odour appears.

In the large intestine great absorption of water occurs, the albuminates are taken up, as are also sugars and fats to a degree.

Marked auto-infection can occur from this viscus.

Among the Ptomains (toxins) found after prolonged stasis are; Cadaverin and Putrescin, which give the symptoms of Muscarin poisoning. More over, Indol, of which Tyrosin is the chief source, is here developed.

Herter has administered it to animals and observed cardiac and respiratory depression, marked contraction of the pupils, clonic spasms, and increased reflex irritability.

Small quantities taken daily, for several weeks, produced nutritive changes, frontal and occipital headaches, colic, diarrhoea, unnatural mental activity, and a tendency to the neurasthenic state.

Indol is absorbed from the intestines, and forms indoxyl-potassium sulphate, or indican, and is so eliminated in the urine.

The causes of indicanuria are excessive proteid diet, catarrh of the small intestines, causing alterations in the mucosa and increased intestinal putrefaction therefrom, typhoid, cholera, etc., constipation, alimentary putrefaction, decrease of normal digestive fluids, intestinal obstruction and peritonitis.

Other conditions of the urine occur as a result of these toxemias from the gastrointestinal tract, the appearance of albumin and casts, or diminished urea excretion.

The kidneys may become damaged from these toxins, and in turn, toxemia from the kidneys may result. We must remember that absence of indican in the urine does not invariably indicate absence of putrefaction, as in diarrhoea, the indol may be to a great extent eliminated.

In some cases even when constipated, there are no evidences of indican, even when there are clinical signs of abnormal putrefaction.

This demonstrates that there are other putrefactive substances besides indol.

Finally the functions of the liver and its relations to toxemia must be briefly considered.

The liver acts as a storeroom of the organism, for peptones, and sugars in the form of glycogen, these substances being kept there until their final use in the system. It excludes poisonous matters from the general circulation by removing them from the portal vein and excreting them by the bile.

Thus, Herter demonstrates that the liver is the chief organ for the removal of indol.

Various poisons and other toxins, as of typhoid, etc., are similarly destroyed, or chemically changed. Therefore, any diminution of the functional mass of the liver, or interference with its functions, impairs this property and toxemia results.

The bile itself, when absorbed into the system, acts as a poison, and produces a definite toxemia.

Moreover, catarrhal conditions of the intestines will often cause obstructive jaundice; or the colon bacillus may become a source of infection of the ducts and gall-bladder.

Insufficiency of the biliary secretion, or the absence of bile from the intestinal tract, favours in turn those conditions which result in auto-intoxication - due to the induced obstinate constipation, from the absence of its antiseptic and peristaltic stimulant effect, and we have the well-known symptoms of bilious indigestion.

You are all familiar with the slow pulse, and other symptoms of jaundice, unquestionably due to auto-intoxication.

Cholin, under normal conditions, is found in the bile as well as in the blood and brain and, in intestinal disorders its amount is increased and it may appear in the urine.

In dilute watery solutions it may be transformed into neurin which is still more toxic.

Large doses of cholin cause nearly instantaneous death in cats and rabbits.

In experimental poisoning, there are dilatation of the peripheral blood-vessels, lowering of the blood pressure, salivation, spastic contractions and stoppage of the heart in diastole.

It is an important factor in auto-intoxication on account of its relation to nervous disorders.

Nerin, a derivative of cholin, on injection into animals, causes dyspnea, salivation, mydriasis, irregular and laboured respiration, unconsciousness and clonic convulsions.

Muscarin is believed to be often associated with cholin and it also causes convulsive seizures. It is also found in mushrooms and in decomposing fish.

All these substances produce epileptiform seizures.

It is interesting to note that hepatic disease may be produced experimentally

by substances allied to the autotoxins, thus in the production of hemoglobinemia (haemoglobinaemia) by the injection of free hemoglobin, or of distilled water, jaundice is produced.

Furthermore, poisons circulating in the blood cause a change in normal bile, in which it increases in viscidity, causing agglutination of

the walls of the bile ducts, obstruction of their lumen, and consequent retention of bile within the sac. Stadelmann was able to produce a jaundice experimentally in animals by poisoning them with arsenureted hydrogen and toluenediamin, and found that there was an enormous increase in the biliary secretion, and that it was very thick and tenacious.

Autopsies showed no catarrh of the duodenum, nor obstruction of the common duct. Moreover, the bile acids, if injected, cause disintegration of the red blood corpuscles, with liberation of hemoglobin. They delay the coagulation period of the blood, and reduce motor and sensory irritability, and may cause coma, insensibility and death.

It is evident, therefore, that the liver cannot produce normal bile from abnormal blood; and the fact that jaundice is caused by exposure to cold, syphilis, typhoid, phosphorus and other poisons, shows how easily the secretion of the bile is altered, and suggests that intrinsic poisons, which are often hemolytic in their action, may act a causes.

Toxic materials absorbed from the intestinal tract, or from the urinary tract, in addition, may cause altered secretions, and the retention of bile from its own viscosity may ensue.

The absorption of bile is, therefore, a serious complication, when surgical operations are necessary, owing to the increased danger of hemorrhage on account of the lengthened coagulation period.

In fact, hemorrhages from the various organs at times ensue, even subcutaneous in character; a condition like purpura hemorrhagica.

For this condition, large and frequent doses of calcium chloride have been recommended. More over, the toxemic condition causes these patients to take anesthetics badly, and renders them liable to shock and collapse, and they have little resistant powers against sepsis and disease.

Having thus described the relations of the gastrointestinal functions to toxemia, at this point I wish to call to your attention several important propositions:

1. That epileptiform seizures, or even true epilepsy, may in some cases
result from auto-infection;
2. That in many cases of nervous or mental diseases, derangements of the gastro-intestinal functions with resulting auto-infection may aggravate the original condition from which the patient may be a sufferer, and thus create a vicious circle;
3. That it is our duty as physicians, as much to our poor asylum, as to our private patients, to place them in the best possible physical condition.

And, finally, that on the patient's admission to such institution, a thorough investigation should be made in each individual case, into the existing conditions of the gastro-intestinal tract, and appropriate treatment be instituted in each; for by this means alone, can a scientific study of the relations of toxemia to nervous and mental diseases and the results of treatment be obtained.

My friend, Dr. Dent, is the first one to appreciate the value of this method; and, as I shall describe to you later, it has already been instituted at the Manhattan State Hospital, West, Ward's Island.

I shall first consider epileptiform convulsions and epilepsy, resulting from toxemia from the gastro-intestinal tract. I judge that you are all familiar with the fact that the carnivora are susceptible to convulsive seizures from dietetic disturbances, whereas the herbivora are exempt.

It is, furthermore, interesting to note, that the administration of meat to young dogs will often be productive of convulsions.

The intestinal walls of infants permit the passage of proteids.

Whereas those of adults do not, which may account for the greater frequency of nervous manifestations in children.

Moreover, red meats in every event tend to aggravate nervous conditions, and it is customary, in the modern treatment of epilepsy and in many nervous diseases largely to eliminate them from the dietary.

I have, furthermore, noted in my own cases of epilepsy resulting from toxemia, that the patients were large eaters, especially of the red meats.

Some 30 years ago Meynert attributed epilepsy to the accumulation of a toxic substance of a proteid nature. The convulsive element is very prominent among the various autotoxins developed in the intestinal canal, notably with hypoxanthin poisoning, with methyl guanidin and with neurin.

The studies of Ceni on epilepsy also demonstrate that it is of autogenous origin and the fact that no immunity occurs from repeated attacks and that the serum which he devised has no inoculatory power shows that the process is not bacterial in its nature.

It would seem, as will now be demonstrated, that certain cases at least must have as their source, auto infection from the gastro-intestinal tract.

I shall first consider epileptiform seizures in the young.

In our study of convulsive seizures in infants and young children, resulting from the administration of improper food, or from overloading the stomach, it was possible to distinguish 2 classes of cases—gastric and enteric.

In the gastric cases, the convulsive seizures come on a short time after the administration of food, half an hour to an hour, or even less, and emesis often produces immediate relief.

I have noted acute dilatation (distention) of the stomach in these patients.

Just as in adult cases, to which I shall shortly refer, I believe, this acute dilatation, to be caused by auto-infection, resulting from fermentative or putrefactive processes in the stomach.

Such attacks, continuously repeated, may predispose to the convulsive habit, and become a factor in the production of epilepsy.

Further more, repeated attacks may tend to render the stomach atonic, and may result in chronic dilatation, with chronic toxaemia as a result.

In the enteric type, the convulsions occur several hours after the administration of food, and are relieved by the use of an enema. These result from toxaemia from the intestinal canal.

Castor oil should then be used as adjuvants.

We may have, instead of these well-defined types, a combination of the two.

Holt, and many others believe that **intestinal putrefaction, exciting convulsions in young children, is an important factor in the production of epilepsy.** Repeated convulsions certainly predispose to the convulsive habit.

On the other hand, **chronic dilatation of the stomach in the young, may result from improper feeding and the products resulting may be a cause of toxaemia from the stomach direct, or after entrance into the intestines.**

A condition of chronic toxaemia may thus result.

As a matter of interest we would note that rickets, which is considered one of the factors in the production of epilepsy, has often associated with it chronic dilatation of the stomach.

Furthermore, Bouchard, in his well-known work on "Auto-infection", lays great stress on the chronic toxaemia resulting from chronic dilatation of the stomach.

I am thoroughly convinced that many cases of disturbances of the nervous system, chorea, so-called idiopathic epilepsy, and other nervous conditions commencing in early childhood, can often be justly imputed to this type of Chronic Toxaemia.

Derangements of the liver and renal functions are often associated, or result from gastro-intestinal disturbances, and take an active part in the toxemic process.

Fortunately, beneficent Nature steps in in many cases, and the toxins are eliminated, with no permanent harm to the patient; while other cases may suffer from continual absorption, from prolonged constipation, for example, without any symptoms whatsoever.

There is a great difference in the individual.

I should now like to call to your attention some interesting data regarding epileptiform at tacks in adults.

Mangelsdorf, of Bad Kissingen, has examined over 400 cases of epilepsy and several hundred cases of migraine, and has found acute dilatation of the stomach, just preceding or during the attacks.

He made accurate drawings, in many cases, of the extent of the dilatation.

Another interesting type, is gastric tetany, in which gastric dilatation is a factor.

Smith (Med. Record. 1900, LVIII) reports a case in which a patient with dyspepsia and gastro-intestinal flatus failed rapidly in strength, and became troubled with insomnia. Tetanic attacks occasionally occurred, in which the fingers were forced into the palms.

There was trismus, and the wrists were extended and rotated outward.

The patient suffered mentally, and sleep was disturbed by spectral delusions.

The stomach was found to be dilated, and in a condition of ptosis, and the patient became eventually extremely asthenic.

These recurring attacks were entirely relieved by lavage and non-nitrogenous diet, but when these measures were neglected, symptoms at once showed themselves.

Dujardin-Beaumetz (L'Union Medicale, 1884, Nos. 15 and 18) reports a case of gastric dilatation with very similar symptoms; and Strong (Boston Med. Surg. Jour., 1902, CXLVII, 561, 597) describes 7 cases, characterized by spontaneous intermittent muscular contractions, and remarks their similarity to epilepsy.

Simpson (Pract., 1900, LXV, 283) and Kussmaul (Deutsches Archiv f. klin. Med., 1869, Bd. 6) find tetany a fairly common accompaniment of dilatation of the stomach.

Moynihan (Pract., 1903, LXX, 354) believes it to be not very rare, and what is of extreme interest, reports 5 cases in which gastroenterostomy (surgical creation of a connection between the stomach and the jejunum) was performed, with a resulting cure in each case.

This is most significant, as **thorough drainage of the dilated stomach, the source of auto-infection, was removed and the patients were cured.**

The brilliant surgical work of Mayo among the nervous and insane is doubtless familiar to you.

I believe that, in certain cases of marked dilatation, or ptosis of the stomach with resulting auto-infection, the field of surgery will in the future play an important part for the relief of nervous and mental diseases.

Bouveret, (Rev. de Medicine, 1892) Ewald, (Berlin klin. Wochenschrift. 1894, No. 2) Fleiner, (Arch. f. Verdauungskrankhciten) Einhorn, (Diseases of the Stomach) and many others have reported cases of gastric tetany. Amato (La Riforma Med. 4 Feb. 1903) reports a case of gastric dilatation with tetany, resulting in death.

He has introduced fermenting materials into the stomachs of animals, and produced dyspnea, myosis, muscular contractions and trismus.

The liver and pancreas (post mortem) showed lesions such as are usually found in poisonings and intoxications.

An interesting case of catalepsy, associated with tetanic spasms, has been reported to me by Dr. John C. Minor, of New York. The patient suffered from chronic dilatation of the stomach with ptosis of the organ.

Following an attack of constipation, or marked indiscretions of diet, she would suddenly become absolutely stiff, with flexion of the limbs, the eyes tightly closed, and would remain unconscious for a number of hours.

From this condition, as she emerged into consciousness, the feet would extend, the knees increase in flexion, and there would be spasmodic twitchings of all the limbs. Between attacks, the bowels would remain extremely loose, there being many watery movements during the day. As the attack was wearing off, watery movements would occur, as many as 20 in number.

While the patient's bowels remained loose, no attacks would occur.

A contributing factor to the gastrointestinal disturbance was believed to be morphine, of which the patient at times took considerable quantities.

Epilepsy, without question, may be in some cases directly attributed to auto-intoxication from the digestive tract.

In the Medical Record, 28 January 1905, appears an interesting article by Dr. Wm. P. Spratling, Medical Superintendent of the Craig Colony for Epileptics, entitled "Gluttony, or Food Poisoning, as a Cause of Symptomatic Epileptic Convulsions."

I quote as follows:

"The first few cases of symptomatic epileptic convulsions that I saw in middle-aged men, in which convulsive attacks invariably followed gross overindulgence in eating and drinking, did not impress me as constituting a class of sufficient importance to warrant their being placed in a group alone.

But having seen 18 or 20 such cases during the past 2 years, I have come to believe that they represent a distinct phase of the subject that is well worth calling special attention to, particularly since they are usually so amenable to treatment; substantially all of them making satisfactory recoveries when treatment is promptly instituted and observed as long as the nature of the case requires.

The cases of this kind that do not turn out well under treatment are those in which the patient is unwilling to deny himself the pleasures of the palate, except spasmodically and immediately after he has had a convulsion.

But unfortunately the lesson learned at such times, is soon forgotten, and all such individuals stand in danger of ultimately becoming confirmed epileptics of the so-called "habit" type, and to suffer all the mental and physical accompaniments of that affliction.

Usually those who suffer in this way are between 35 and 45 years of age.

Most of them are men of robust, frequently plethoric physique; all are hearty eaters; all lead more or less inactive, indoor lives, and some are heavy drinkers.

When the latter factor complicates the case, the prognosis is less hopeful than when there is excessive food consumption only; not because the type of convulsions induced by alcoholic indulgence yields less easily to treatment, but because the drink habit is not so readily broken.

While it is true, as a general rule, that heredity plays but little part in the causation of epilepsy, when it originates anew after the twentieth year. I have found that it is quite frequently a factor of some degree in the cases in question.

It seems that there need not be insanity, or alcoholism, or epilepsy, or some other nervous affection in the ancestors of such cases as these, but a stomach disorder of pronounced type, like an aggravated dyspepsia, may make its influence felt in some obscure way in the off spring.

A very intelligent professional man, 40 years of age, came under my care 8 years ago.

He was subject to symptomatic grand mal attacks that invariably appeared the day following gross dietetic indiscretion, such indiscretions usually occurring between midnight and 2 a.m. He had a weak stomach and could digest certain foods only.

On investigation I found that his father suffered the better part of his life in the same way. The father respected his nutritional peculiarity, but the son did not; so the father escaped anything more serious than a severe, periodic dyspepsia; while the son was threatened with becoming a confirmed epileptic.

After having an attack while speaking in a public hall once, he realized his danger, changed his manner of living, and had been free from attacks for 5 years when I saw him last on 24 November 1904.

The primary cause of convulsive attacks in cases of overeating and overdrinking in certain individuals seems to lie, first, in a weak stomach, and, second, in some obscure disorder of metabolism.

Not only is the amount of food habitually taken by such persons beyond all reasonable requirements, but it is usually of an improper kind, and is taken to gratify what seems to be an abnormal appetite.

The type of convulsion usually induced is of the "grand mal" variety, though it is not definitely fixed.

So long as the attacks remain "grand mal" only, the case is less likely to pass into "habit" epilepsy than when the type changes. The last case of the kind I saw was that of a newspaper man, 38 years of age, who suffered "grand mal" attacks for some years, but whose dietetic habits were so atrocious that the seizures at the end of that time changed to infrequent grand and very frequent "petit mal", with the result that some mental enfeeblement is becoming apparent, his memory in particular. This annoys him painfully, for in his work a good memory is a necessity. Along with the change in the type of his convulsions have come periods of marked automatism.

The day before I saw him he had a break fast of cereals, eggs, fried potatoes, pancakes and coffee; a hearty dinner at noon of a rich soup, chicken pie, several vegetables and pudding, with wine sauce for desert: for supper he had a heavy meat pie of which he ate heartily, 3 large baked potatoes, 3 pieces of apple pie, and 3 cups of tea: and yet he wondered why he suffered so much from headaches, from his stomach, from eructations of gas and flatulence, and attacks of momentary unconsciousness that were increasing in frequency, and that, worst of all, were fast undermining his mental faculties. He had written me 2 letters within a week, one on the day before I saw him, and yet he could not recall my name when I met him. **While the indications for treatment in such cases are plain enough, they are not so easily carried out. The cause of the convulsions must be sought in toxic states due to faulty metabolism. We must first eliminate waste and toxic products, and then plan a course of treatment which will prevent a recurrence of such products. In a number of cases of epilepsy, during the past few years, Dr Wm. H. Thomson has secured brilliant results with the cure of patients, from treatment of the gastro-intestinal tract."**

In a few instances, gastric analysis showed hyperchlorhydria, while in a number of cases there was hvpochlorhydria, with or without gastric dilatation.

The treatment consisted in avoidance of red meats, intestinal disinfectants, regulation of the bowels and diet.

I have treated recently several interesting cases of epilepsy, which were unquestionably due to auto-infection from the digestive tract.

Allow me briefly to refer to one case: A young man, came for treatment, having had epileptic attacks for about 6 months.

About a year previous to this, he had been in the Philippines, where he had a severe attack of dysentery. Since that time ha has been troubled with occasional mucous discharge from the bowels.

For some months past, he had been constipated, belches gas from the stomach, and has water brash and a sour taste in his mouth; the tongue is coated.

The gastric symptoms are more marked before his attacks. He has averaged one attack a month for 4 months, and during the last 2 months has had 7 attacks.

The early attacks were between 7 and 10 p.m., but more recently they have been from 4 to 7 a.m. The attacks clearly followed extreme indiscretions in diet, and the mother of the patient (a trained nurse), sent him to me for treatment, believing that gastro-intestinal disturbances were the factors in the case.

In the early morning attacks, he would be awakened by abdominal discomfort, then the hands would be gin to twitch, the wrists and arms would flex, then these would be raised automatically to the level of the head, and he would then become unconscious.

The tongue was bitten during a number of the attacks.

Examination of the stomach contents showed: Total acidity 120 + free hydrochloric acid, 90 +, a condition of hvperchlorhydria. There was intestinal tympanites, and some odour to the stool. Constipation was marked.

The patient was shut off from red meats, smoking and drinking, and placed on a simple diet, especially a light supper.

The bowels were freely opened with cathartic, and thereafter kept carefully regulated. He was given benzoate soda gr. x t.i.d. for the intestinal putrefaction; and soda bicarb, gr. x to xx t.i.d. an hour after meals for hyperacidity.

For 4 months he had no attacks. He then ate a large amount of candy during the afternoon and evening, and promptly had an attack early the next morning.

During the next 3 months, he had 3 attacks, all following in discretions in diet, **and since then has been perfectly well, a period of 10 months so far, by merely taking gastro-intestinal treatment and exercising care in diet.**

This case would seem to be of interest.

I have noted several other cases, where there was hvperchlorhydria with atony of the stomach, and a number with hvpochlorhydria and dilatation.

The position of the stomach in epileptics recently examined

The results secured were as follows:

Females, total number; 34 cases; gastroptosis, 16; dilated stomachs, 16; stomach in normal position, 2.

Males, total number, 6 cases; dilatation of the stomach, 5; stomach in normal position, 1.

The motor functions of the stomach were examined and the analysis of the gastric contents were made with all these patients.

These factors were considered in making the diagnosis. There was abnormal secretion in the stomachs occupying the normal position. These data are certainly suggestive.

There has been improvement in some of these cases.

Many of these asylum patients are of the worst type, and in some, degenerative changes have occurred in the brain. Nevertheless, even under such conditions, auto-intoxication can be minimized and susceptibility to convulsions can be diminished by proper treatment.

There seems to be an unfortunate disposition on the part of neurologists to consider various gastro-intestinal disorders, dilatation of the stomach, inordinate appetite, stuffing, bolting the food, etc., to be the result of nervous or mental disease.

They forget that bulimia (inordinate hunger soon after a meal), acoria (absence of satiety), polyphagia, etc., are often found in stomach diseases.

I think that we have, even at this point, fully demonstrated that, in some cases at least, the gastro-intestinal disturbances may be primary.

You are all familiar with the symptoms resulting from chronic constipation such as head ache, drowsiness, inability to concentrate the attention, general malaise, etc.

Duprey, in the Lancet, 1902, cites the following interesting cases illustrating extreme types of toxemia as a result of this condition:

Case I - A woman of 35 years suddenly became unconscious with rapid and shallow breathing, pulse 96, temperature normal. Examination of the urine showed no signs of nephritis, attention to the bowels was followed by recovery.

Case II - A young man suddenly became unconscious, but could be roused from his stupor only to talk incoherently and relapse into the unconscious state. Heart, lungs and kidneys were normal. Recovery after free evacuation of the bowels.

Case III - A child, three years old, with a history of constipation, suddenly expired while playing. Autopsy showed no condition which could account for death except that of fecal distention of the descending colon. Some on the other hand have no symptoms resulting. Many nervous conditions, neurasthenia, mental depression and melancholia, can be imputed to auto-intoxication. Brokers

and professional men, with irregular habits of life, constitute al most a class in themselves. Bolting the food, or excessive eating or drinking, rich food, etc., are factors in the production of hyperacidity, motor insufficiency, dilatation of the stomach, constipation, and auto-intoxication, with resulting disturbances of the nervous system, and the treatment of the gastro-intestinal conditions will rapidly restore the patient's nervous tone in many cases.

Mental depression often accompanies, or is a symptom of, toxemia, and this condition may even progress to depressive insanity.

Among other symptoms of auto-infection from the digestive tract, are apathy, insomnia, somnolence, and inability to concentrate the attention.

Resulting from the auto-intoxication of jaundice, we may have all grades, from mental depression to melancholia and insanity. It may cause coma, muscular twitchings, convulsions and death.

Stern (Med. Rec, 1902, LXI, 115) reports a case of narcolepsy in which, having excluded syphilitic endarteritis, he imputes the condition to auto-infection, resulting from dilatation of the stomach and hyperchlorhydria.

Hamilton (N.Y. Med. Journal, 1896, LXIV, 576; Bouchard, Vaughn, Herter et al) offers the following conclusions, having made a special study of the digestion and urine in the insane:

> *"Varying and fugaceous illusions and hallucinations, pallor, increasing exhaustion, verbigeration, confusion and unsystematized delirium, are due to auto-intoxication. Auto-intoxication is common in alcoholism and the drug habits. Epileptiform attacks are directly connected with putrefactive conditions in the intestines."*

An interesting condition, resulting from auto-intoxication, is Graves disease.

I have already referred to the work of Dr. Wm. H. Thomson, "Graves' Disease, With and Without Exophthalmic Goiter."

He holds that the toxin is formed first in the alimentary canal, and then remains in the circulatoin on account of disturbance of the thyroid.

He describes 28 characteristic symptoms. Many cases of true Graves disease exist without thyroid enlargement.

He believes that implication of the thyroid is secondary, just as is the enlarged spleen in some cases of chronic ague (fever and shivering).

He has secured some brilliant results by treatment of the gastro-intestinal tract.

I have already referred to the suggestive fact that ethylenediamin, a ptomain (toxin), found in some cases of dilated stomach, will produce exophthalmos on injection into animals.

Another interesting class of nervous cases, resulting from auto-infection, are those in which ptosis of the gastro-intestinal tract is the primary factor.

There are various types of this condition, from those of a mild degree to the extreme condition described by Glenard.

With the descent of the stomach and intestines, there is a nephroptosis of the

right kidney, sometimes of both, and there may be, in addition, ptosis of the liver and spleen.

In the first place, the vertical stomach is the fetal position of the organ.

Examination of infants and of young children will demonstrate, occasionally, a congenital gastroptosis to exist, and in some cases gastroptosis with its associated enteroptosis has been accidentally discovered and has undoubtedly existed for many years, with no symptoms resulting, the patient being in perfect health; but some contributory factor, local irritation, anemia or intercurrent disease may destroy the equilibrium, and gastro-intestinal disturbances, constipation, etc., occur, causing auto-infection, and as a result, neurasthenia.

The maintenance of a certain degree of intra-abdominal tension is a factor in preserving the position of the viscera; thus a loss of tone in the abdominal muscles, or absorption of omental, or intra-abdominal fat, may be a factor in the production of ptosis.

So also may an abnormal elongation of the mesentery, or an atonic condition of the suspensory ligaments of the stomach and colon.

The loss of tone in the stomach and intestines - atony - is another factor in the production of ptosis. I have always believed dilatation of the stomach and gastroptosis to be progressive degrees of atony; that in ptosis of the stomach, the organ was dilated and that gastroptosis might be primary, with enteroptosis a secondary condition; this agrees with Riegel's views.

I cited a case in which I was convinced dilatation first occurred, then gastroptosis (abdominal ptosis; abnormal downward displacement of the stomach), and later enteroptosis.

Glenard on the other hand, claims that Enteroptosis is invariably the primary condition. The conditions are undoubtedly associated, but I believe that either may precede the other. It is not the degree of the descent of the lower border of the stomach which constitutes a ptosis.

With gastroptosis, the lesser curvature of the stomach descends with the greater and loses its relations to the diaphragm; while in dilatation, the muscular fibers elongate in the vertical direction—the greater curvature alone sinks, and the lesser curvature maintains its relations and does not sink.

The gastric condition may be one of hyperchlorhydria, or of hypochlorhydria. or even achylia gastrica. If the splashing sound be confined to below the umbilicus, and to the left of the median line, and one can determine a floating kidney, we can be sure that gastroptosis is present.

In the milder degrees of ptosis, it is not so easy to differentiate between ptosis and simple dilatation; and in this event it may be necessary to employ inflation with air, or transillumination of the stomach.

Undoubtedly many cases of neurasthenia, treated with brilliant results by the Weir-Mitchell rest cure, are the result of gastroptosis. Rest and the putting on of fat to increase intra-abdominal tension are of value in ptosis.

Rose's adhesive plaster belt is of service in the treatment of these cases, as it supports the organs and increases intra-abdominal tension.

I consider mucous colic to be one of the manifestations of Glenard's disease, and the neurasthenic condition present in the disease, to be the result of auto-infection.

These views are given in a paper, entitled "Mucous Colic", American Medicine, 4 March 1905.

Let me say that many cases of neurasthenia occurring in women are due to autoinfection, associated with ptosis of the viscera; and I have seen excellent results secured from the treatment of the latter condition.

In extreme cases, surgical measures, such as revision of the abdominal muscles, with shortening of the suspensory ligaments of the stomach, or gastroplication, as suggested by Dr Robert T. Morris, would be of value.

I have already called to your attention that auto-infection from the gastro-intestinal tract may, in many cases, even when there are organic changes in the brain, create a vicious circle and aggravate the symptoms.

Such derangements of the digestive functions occur in syphilis, from alcohol and from drug habits, as well as in other conditions.

For example, I - present the following data to you of 13 cases of dementia paralytica, investigated by Dr Dent.

You will note a diminution in the frequency of the convulsions, and a lowering of the temperature in these cases, resulting from regulation of the bowels and treatment of the gastro-intestinal tract, appropriate to each case.

Dementia Paralytica
(Analysis of 13 cases)

Tabetic type, 4 cases: cerebral type, I case; hyper acidity, I case, with dilatation of stomach slight and commencing: achylia gastrica (functional), I case; hypoacidity, II cases, with 2 severe types of chronic gastritis; dilatation of stomach. II cases; gastroptosis, 2 cases; chronic constipation, marked and of varying degrees of severity, 13 cases; odor to breath, 13 cases; evidences of putrefactive changes in the gastro-intestinal tract, 13 cases; temperature, no result from treatment.

Two cases (in one of these the temperature was due to foul bed-sores); temperature lowered in II cases, and in some very decidedly as a result of treatment, and remained lowered (Rectal Irrigation was an aid in lowering the temperature in 3 cases); convulsions, none occurred at any time in 7 patients; diminished in frequency in 5 patients by treatment: attack of syncope (equivalent to convulsive seizures), absolutely stopped by treatment. 1 case: died, 1 case.

In Book II, you will find abstracts of each case, with a photograph of the stomach. The data are tabulated on the cover.

As Intestinal Irrigation proved of value in 3 cases.

The continuous bath, as advocated by Dr. Dent, is of great value as a sedative and to eliminate toxins.

Lavage is performed when required. Special cases, such as ulcer of the stomach, etc., are referred to the visiting gastrologist.

The bowels are regulated, and Hydrotherapy (for which there are all the

modern facilities) is applied when indicated.

A brief history of a case kept for 5 weeks in a continuous bath. By such means, the influence of auto-infection from the gastro-intestinal tract on each patient is carefully observed.

Complete urinalysis, estimation of urea—the presence of indican, etc., is carried out in every case.

To my knowledge, this is the first institution in this country which has placed the study of the relations of auto-infection to nervous and mental diseases on a practical clinical basis; and it is from such investigations that we secure results from the science of medicine, and the greatest benefit to suffering humanity." - Dr Robert Kemp, MD Consulting Physician, Gastro-Intestinal Diseases to the Manhattan State Hospital, in "Medical News", 8 July 1905.

The Liver and the Blood

"The Liver, serves as a body strainer, straining out the toxins of the body.

It stands between us and death by poisoning.

Not only is it one of the most important Emunctories of the body, and one of the 5 channels of elimination of body wastes, but it is also an important organ of digestion, acting upon the fats of the food, oxidizing the proteins into similar forms, converts the starches into glycogen.

The liver weighs 2 kilos shortly after a full meal.

> *"The architect of the liver had a special preference for the number 5, for the liver is permeated by 5 fissures, and is suspended by 5 ligaments, and is intimately attached to 5 other organs. It contains 5 different kinds of circulating vessels, and requires 5 kinds of bile ducts to transfer the bile from the liver cell to the duodenum."*

It produces from 750ml ounces of bile daily.

The entire blood is said to be renewed from 70 to 120 days.

It is the duty of the liver to dispose of the dead corpuscles of this blood, and every minute drop contains about 5 million corpuscles, so that the task of the liver in carrying off this debris is great. It is a rendering establishment; out of these dead corpuscles it makes bile pigments.

A man could not smoke, were it not for the liver. This organ takes up the nicotine and destroys it.

If led from a water pipe is imbibed, the lead is stored. If alcohol is drunk, the alcohol is oxidized.

The liver sacrifices itself for the body in general.

Twice as large a dose of poison is required to kill an animal that has a liver as to kill one deprived of this organ.

The liver is a great toxic filter or poison sponge for the straining out or reduction of toxic materials absorbed from the alimentary canal from whatever source. A man may be said to be as old as his liver.

The liver's work being to destroy poisons, if it fails to do its work, then these poisons gradually destroy the man.

The Glycogenic Function

The liver is almost as large a gland as all the other glands of the body combined.

Its blood supply is enormous, having as its supply the hepatic artery as well as the immense portal vein. The liver is also a warehouse for sugar, the great quantities which have been converted by the process of digestion, enter through the portal circulation; and as this great quantity cannot be used at once by the system, it is stored in the hepatic cell in the form of glycogen, and then dealt out as the system demands; thus we find soon after a meal that the liver is swollen; in place of reaching an inch from the edge of the ribs, it may extend a half inch, and in over-eating it may extend to the edge of the ribs.

If a person habitually over-eats, the blood vessels of the liver become so distended that they remain distended, and the liver becomes permanently enlarged, thus is induced a passive congestion. Drinking too much fluids, as tea and coffee at meals, will produce this condition.

All the food that we eat, and all the drink passes through the liver. Alcoholic drinks therefore have an immediate effect upon this organ, because alcohol reaches the liver without any change.

The liver is not only a storage plant storing the sugar, but a manufacturing plant, making biliary salts and acids. It also acts as a garbage disposal plant, taking the wastes and poisons from the blood, and rendering them into harmless substances, such for instance as urea, which is eliminated by the kidneys.

> *"Owing to the tremendous amount of fluids circulating in the liver - venus blood, arterial blood, bile and lymph - the liver is a very fluid organ, much subjected to congestion."*

A physiological congestion occurs after each meal, but over-eating produces an unnecessary congestion, as does also alcohol.

Etiology of Liver Disease

Studying the etiology of the diseases of this organ, we find two things stand out prominently as factors:

1. Is the habitual over loading of the liver by poisons generated in a dilated stomach;

2. Over-loading by the toxins and Ptomaines (from bacteria) and Leucomaines (from cells) generated in the colon and sigmoid in constipation.

Rectal ulceration, colitis and sigmoiditis are markedly increased by auto-intoxication which products flood the liver; besides, absorption from an abraded (eroded) mucous membrane is always much greater than from a mucous membrane intact.

Many patients consider themselves normal if there is a call of nature once per day.

The bowels move usually in these cases, but they move 24 hours behind time.

Normally there should be 3 movements daily, or after each meal, for a 24 hour retention of faecal matter means that the bacterial flora will be afforded opportunity and time to produce a progeny of their kind.

This increases fermentation and putrefaction of intestinal contents, thus flooding the blood-stream with poisons which clog the liver cell and interfere with the processes of oxidation.

The liver neglects its normal work of collecting waste products from the blood-stream, hence the system becomes clogged by bilirubin and biliverdin, and other cell wastes, producing the bilious state.

The failure of the liver to eliminate these bile pigments and salts which serve as nature's laxative, induces a worse constipation.

Thus a vicious cycle is established, the constipation torpifying the liver,and a torpified liver inducing constipation.

The Liver and Toxins

The liver is a barrier interposed between the digestive tube and the rest of the system:

1. To collect and to destroy toxins introduced into the alimentary canal as foods or medicines; thus it is an organ of antisepsis;
2. It is charged with the secretion of bile, a normal digestant;
3. It is the regulator of the glycogenic function of the body, i.e., it furnishes the exact amount of sugar needed for the body;
4. It regulates the absorption and production of fat;
5. It regulates the destruction of blood corpuscles, produces urea, and governs the production of heat and energy. It destroys poisons.

Lussana demonstrated that mineral poisons accumulated in the liver, also that arsenic, lead, mercury and iron may be recovered from the hepatic gland.

Jacques in 1881, discovered that the liver destroys vegetable alkaloids, as stychnine and morphine.

In 1886, Bouchard discovered that toxins and tox-albumens were rapidly destroyed. In a frog it requires 34 m. grams to kill; but after the liver was removed, 8 m. grams killed.

Rogers showed that one of the most important functions of the liver is to

destroy not only the toxins of the food ingested; but also those produced by the body.

The intestinal contents include a great quantity of alkaloidal substances of a toxic nature, which would penetrate the system but for the portal circulation and the antiseptic function of the hepatic cells which each moment destroys and neutralizes these toxins. It was found by experiment (Rogers) that the blood from the portal circulation is two and one-half times as toxic as the blood of the hepatic vein.

It has further been shown that it is the parenchymatous portion, probably the hepatic cell itself, that possesses this power to destroy poisons.

The Bile

Bile is found to be much more toxic than the urine (D. Beaumetz) and if all the bile should pass directly into the blood, the patient would be poisoned principally by the bilirubin in the bile in a little less than nine hours, while the urine would require to kill 2 days 6 and a half hours; so under diseases of the liver we should seek to in crease the liver's activity by increasing its anti septic power which is correlated with its glycogenic functions; and we should restrict the sources of poisoning of the body so as to reduce to a minimum the work of the liver.

The amount of bile produced is estimated at 750ml per day.

The flow is constant, is aided by respiration, but is the greatest while eating.

The bile contains no microorganisms; it is an anti-ferment, and prevents the putrefactive action of substances in the intestines.

It is also a lubricant, thus its suppression leads to constipation. It is alkaline in reaction, which alkalinity aids in the emulsification of fats, thus aiding the work of the pancreas.

The duct of Wirsung from the pancreas, and the common bile duct both empty into the duodenum about 10 centimetres below the pylorus and the bile and pancreatic secretion soon commingle.

The principal salts of the bile are sodium glycocholate and sodium taurocholate.

These are excreted in the faeces as are bilirubin and biliverdin, which give the stool their characteristic colour.

These salts are normally re-absorbed by the intestines and used again by the body.

The antiseptic power of the bile is sufficient to prevent a multiplication of bacteria in the intestines, for where the bile is below normal the microbes immediately take advantage of the opportunity and increase in numbers enormously.

The result is putrefaction and fermentation, with the production of many kinds of poisonous materials, the absorption of which cause different symptoms. Some slow the heart, others produce headache, lassitude and melancholia, or perhaps diarrhoea.

Boix, by experiment on rabbits, showed that **hepatic cirrhosis is more often**

produced by acids and other poisons found in the stomach and intestines from indigestion than by alcohol.

Butyric, oxalic and acetic acids, pepper, spices and other condiments are more active in producing cirrhosis than alcohol. **These produce indigestion, and the indigestion produces poisons and acids which cause a baneful action upon the liver.**

The Influence of Diet

Voit's experiment on rabbits with the acids produced from indigestion, shows that butyric acid added to bran and fed to a rabbit produced death in 6 weeks.

An examination showed that the rabbit had an inflamed and hardened liver.

In an other experiment when acetic acid (vinegar) was added to bran, in 6 days the rabbit had a very highly inflamed and hardened liver. In other words, acetic acid or vinegar, was the most poisonous thing he could have given the animal, producing hardening or "hob-nailed liver."

The result was more serious than with alcohol. Indigestion causing the formation of acids of fermentation is the most frequent cause of disorders of the liver.

The Liver and Drugs

Bennet's experiments upon dogs show that calomel and mercury in all forms lessen the secretion of bile, and hence hinder rather than encourage the work of the liver.

The best way to deal with a sluggish liver is to give it a chance by lessening its load.

Give it a minimum amount of work to do by employing a careful dietary. Deep respiration, called "massage of the liver", powerfully increases the flow of secretion and bile from the hepatic cell." - Dr A. W. Herr, MD in "Hepatic Insufficiency", Medical Council, April 1919.

> *"I am confident that toxic materials absorbed from the intestine, whether directly or indirectly, may so alter the muscular tissue of the uterus as to bring about these untoward events. Sulphuretted hydrogen is occasionally produced in the bowel. It is a powerful protoplasmic poison, and by permeating the uterine tissues it may inhibit their actions. Plants exposed slightly and for a short time to the influence of this gas become more or less limp and tend to droop. A toxic material having an action like curare is commonly found in the gut, and this poison, when absorbed, may so affect the muscular tissue of the uterus as to cause it to lose its power of resisting filtration—a power which is so essential for the maintenance of turgescence." - Dr. James Oliver, MD in "Medical Press and Circular", 1898.*

Mental Overstrain

"Dr. Sutherland, of London, found that a change in the healthy mental tone of an individual showed itself in the development of the following symptoms:

1. Irritability and tendency to take offence.
2. Moroseness and silence, or fault-finding with servants.
3. Suspicion and jealousy of best friends.
4. Impairment of memory, forgetting hours of meals.
5. Inattention to exercise and state of bowels.
6. Neglect of personal appearance.
7. Altered facial expression, notably in melancholia, with marked furrows.
8. Prominence and brilliancy of cornea in hysterical and puerperal mania.

Note: Auto-intoxication will alone induce these symptoms.

Symptoms of Bodily Overstrain

1. Harsh, dry skin, as a rule, though sometimes perspiring.
2. Sometimes a peculiar odour.
3. Coated tongue, with offensive breath.
4. Constipation and feeble circulation.
5. Headache and pallor of face.
6. Sexual appetite, either in abeyance or abnormally strong.
7. Frequent suppression of menses in females.
8. Subjective deafness or abnormal auditory sensation.
9. Altered conversational style, and talking to one's self.
10. Delusions and illusions later on.

Note: Here, too, we see the effects of auto-intoxication, and I would impress the fact upon you that in this condition there is a most marked lack of endurance, shown by disconnected thought and easily induced fatigue." - Dr C. Spencer Kinney, MD, in "Auto-Intoxication, Overstrain, Exercise and Bathing", 1905.

Symptomatology of the Nervous System in Chronic Intestinal Toxaemia

"The newly found and rapidly developing relationship between mental and nervous conditions and disturbances of the gastro-intestinal tract.

However, it is difficult to find any case in which, on close investigation, symptoms referring directly to the intestinal tract are absent.

The error in diagnosis as to the fundamental condition can frequently be explained by the fact that the gastro-intestinal disturbances are so often considered

secondary to a disturbed nervous system, when in reality the opposite is true.

As an example of one of the commonest misapplications of diagnosis we mention neurasthenia.

It is perfectly true that we may have a neurasthenia brought on by causes not connected directly with the intestinal tract, and in these a functional disturbance of the stomach and intestine may follow.

Church and Peterson mention that neurasthenia may be caused by organic conditions such as phthisis, Bright's disease, diabetes, gout, rheumatism, and uremie and toxic states generally.

The fact that chronic gastro-intestinal conditions are almost invariably followed by neurasthenia of differing intensities is not mentioned.

For purposes of simplification we have separated the symptomatology of the nervous system in connection with **Chronic Intestinal Toxemia** into 4 classes, namely, cases involving:

1. The mental system,
2. The sensory system,
3. The motor system, and
4. The sympathetic system.

These classes of symptoms may occur separately or in combination, usually the latter, so that we can designate them only according to the predominant symptoms. It would be impossible to say why the toxin resulting from these intestinal conditions should have a selective affinity for any one part of the nervous system, just as it is impossible to ascribe reasons for the localization in other toxic states resulting from tuberculosis, diabetes, gout and syphilis.

It is a significant fact that in practically all of the cases considered in this article the nervous manifestations have either cleared up or have been markedly improved by treatment directed toward the intestinal toxemia.

A great many of these patients have been treated by the usual therapy for disorders of the nervous system, without result.

This is not in the nature of positive proof, but is very strong evidence as to the etiology of the disturbances of the nervous system in these cases.

Case Reports

Case 1. — History: Miss L. E., aged 46, had been constipated 16 years following an attack of nervous prostration. The symptoms, which began at this time and had become progressively worse up to the time when she was first seen, were intense headaches, hemicranial in type; she felt as if she had two brains, one side normal and the other side abnormal. Severe melancholia, with violent outbreaks, which was progressive, kept the patient from teaching, 12 years ago curettage was done,

8 years ago, after a diagnosis of uterine fibroids, a hysterectomy and appendectomy were performed with no improvement. For 5 years she took morphin, in increasing dosage, for relief from pain in the head. She always felt uncomfortable in the abdomen, especially when standing. Ability of mental concentration was partially lost. She was much depressed.

Examination: The roentgen ray revealed a water-trap stomach with 1/3 retention at 7 hours. The small intestine was intensely rapid. Meal was in the colon in 1 hour and 45 minutes. Both flexures and transverse colon were very low. The urine was constantly normal except for a large excess of indican. Blood pressure for many years was around 240. The Wassermann reaction was negative.

Blood analysis, chemically, showed low urea nitrogen, uric acid and blood sugar. Slightly high freezing point of serum.

Subsequent chemical blood analysis showed a similar picture with the exception of a high uric acid retention. Examination of the optic fundus revealed a normal picture.

This patient was in a deplorable condition, mentally and physically, and life had become a burden to her. She could work only with frequent long periods of rest.

Treatment: She was operated on by Drs. Draper and Lynch in August, 1914. The pylorus and duodenum were normal except for some slight thickening. The gallbladder was thickened and contained one stone, the size of a marble.

The stone was removed. The transverse colon showed many diverticula, one of which was solidified. This was removed. The sigmoid found bound down in a scar from a previous operation was freed. A partial colectomy (developmental reconstruction) was done.

End-lateral anastomosis was effected. A partial Coffey operation was limited to three suspensory sutures to the left. There was no postoperative shock.

After an initial improvement in all symptoms the patient relapsed and came to see Dr. Satterlee four months later.

She had returned to work at school against all advice. She was incapacitated again. She was sent to a sanatorium for rest, and given autogenous colon bacillus vaccine. Doses were given weekly, gradually increasing in amount.

There was rapid improvement. After a short time she returned to work and remained there while receiving weekly doses of vaccine and general supervision regarding diet and hygiene. One year later the patient said that "although formerly a burden to do a pleasure, it is now a pleasure to do a burden."

She was feeling much better and treatment was stopped. Six weeks later she relapsed again and returned for treatment. This caused improvement once more.

She continued to alternately improve, stop treatment and relapse until January, 1916, when she had a severe relapse and again went to the Sanatorium. She became very melancholic and threatened suicide.

She had intense pain in the left side of the head and was very nervous and hysterical. Vaccine gave intense and severe reactions.

In March, 1916, she felt so well, and had for the last month or two, that she thought she should be again dismissed from treatment.

At the present time the patient is still teaching and feels well unless tired, when she has a rise in blood pressure and a moderate amount of depression.

Comment

The interesting features in this case are the excellent results, especially in the mental condition, after removal of the cecocolon, the subsequent diseased condition of the remainder of the colon, and the good results from the administration of the autogenous colon bacillus vaccine.

These 3 things point very strongly to a diseased colon, and the colon bacillus as the causative factors in this patient's condition. The high blood pressure seemed to be partially dependent on the intestinal toxemia. The former was always increased after prolonged fatigue, and at the same time the toxemia increased.

The chemical blood analysis and the examination of the optic fundus showed a probability of lack of any advanced renal changes.

Case 2. — History: Mrs. S., aged 34. There was a history of typhoid and erysipelas. For 5 years previous to being seen she had been much troubled with gas, pain in the epigastrium and constipation, with extreme tenderness at times to the left of the umbilicus. While on her feet she is comparatively comfortable, but pain begins when lying down. She has the sensation in the early morning hours of being tightly gripped in the left side as in a vise. There is no nausea or vomiting. The patient has lost 40 pounds in the last 5 years. She has extremely nervous spells and wants to laugh and cry. The desire is hardly controllable at times. She is very sleepless at intervals and when so keeps the whole family awake. Her husband is sometimes at his wit's end to know how to control and keep the patient calm. When very nervous she becomes hysterical and disturbs the neighbours. She screams, laughs loudly, and one time ran down stairs and into the street in her night dress. A roentgen-ray examination revealed a water-trap stomach, and ptosed, sluggish colon. Lavage at one time showed 8 hour residue in the stomach.

Diagnosis: Chronic Intestinal Toxaemia, water-trap stomach and ptosed sluggish colon. After treatment by diet, hydrochloric acid, massage, etc., the patient was operated on. The pylorus was high, fundus low. A long adhesive appendix with constriction was removed. Colon and stomach suspension was done. 7 months later constipation had disappeared and the patient had gained 35 pounds. Nervousness was much improved. There was occasional gas, nausea and eructations. One year later, however, the nervousness returned in marked degree and there was troublesome constipation. The patient was not sufficiently careful in diet and habits. She was again put on rigid anticonstipation diet.

The foot of the bed was elevated, and exercise and fresh air ordered, with very

little improvement. She was then given a course of treatment with autogenous colon bacillus vaccine.

At the present time, one year later, reports show the patient to be in good physical and mental condition.

Some cases show a marked predominance of sensory symptoms. These may be classified as paresthesias, hyperesthesias, anesthesias, hyperalgesias, analgesias, myalgia, neuralgia, neuritis, perversions of taste and smell, hyphedonia, and hyperhedonia. In 518 tabulated cases, 421 patients complained of headache, 302 of vertigo, 397 of paresthesias, 387 of myalgia, 379 of "nervousness" and "nervous sensations." We have observed that as a general rule the mental symptoms were more likely to occur in patients who are highly temperamental, and the sensory symptoms in those of a phlegmatic disposition.

Case 3. — History: Mrs. C. M., aged 50, was of nonenteroptotic type. She had been strong as a child but subject to "bilious attacks." She was naturally a hearty eater, including meats, and always had more or less trouble with her digestion. The trouble began after the birth of her first child, 21 years ago. After the second child, 2 years later, she had a perineorrhaphy, and 5 years later an appendectomy and ventral fixation was done, 5 years ago she had a bad attack of indigestion. A diagnosis of carcinoma of the stomach was made.

The patient lost 18 pounds. She complained that her digestion is never right and that she has always much flatulence and sleeps poorly.

There was no apparent constipation until 2 months before examination, when she had a faecal impaction in her right side. She wakes up at 4 am with headache, pain in the back of the head and neck, nausea and marked eructations. She has pain, as she expressed it, "in every nerve of the body from head to foot." The left arm and shoulder are tender and sensitive and the teeth supersensitive.

She has numbness in hands and legs. She is very nervous and has had some depression and loss of concentration. She has polyuria, urticaria, and there is an odour to the perspiration. Her chief complaint is pain in the whole body and soreness in the joints of the fingers and toes.

Physical Examination: This revealed a muddy colored skin, dry brittle nails and hair, coated tongue, tenderness over the whole colon, splashing and crepitation over the cecum. Roentgenography revealed water-trap stomach, residual cecum and residual sigmoid. She had an enormously dilated rectum. There was no gastric retention.

Treatment: This consisted of diet, autogenous colon bacillus vaccine, hygiene, local treatment of a rectal fissure and haemorrhoids. There were very severe reactions from vaccine, increasing pain and nervousness, lasting from 24 to 48 hours. Her symptoms, which have been chiefly neuralgic pains, nervousness, insomnia, and irritability, have been markedly relieved by treatment for chronic intestinal toxemia, which included forty doses of the vaccine. The strong reactions

following vaccine administration, and the periods of marked improvement thereafter, were very remarkable and seemed to have a strong bearing on the etiology of the symptoms and on the toxemia.

The third class of cases considered, those showing symptoms of the motor system, are fewer in number than the cases with the mental conditions or those with affections of the sensory system, and form a small percentage of the total number of cases.

Among these are the so-called cases of epilepsy, of intestinal origin. We know that treatment of the diseased intestine itself and treatment directed toward the resultant toxemia has cleared up the symptoms directly referable to the intestinal tract and has produced, a vast improvement in the epileptic seizures.

When a relapse in the intestinal symptoms has occurred there has almost invariably been a recurrence of the epileptic seizures.

We are of the opinion that a surgical procedure, such as a developmental reconstruction of the colon, in our cases under observation, would correct the intestinal condition and cure the disease.

The results obtained in the cases to date are very suggestive of a close relationship between these epilepsies and intestinal toxemia.

The case history which follows is interesting in this connection:

Case 4. — History: Miss S. K., aged 38, was first seen 5 years ago. She had been constipated all her life, had had "indigestion" for 12 years, and was getting worse.

At the age of 14 she began to have attacks of unconsciousness in which she would bite her tongue. She had premonitory aurae at times. These came on usually in the middle of the night and in the early morning hours, leaving her feeling weak and exhausted after waking. Appendectomy was performed 1 and one-half years ago. The left ovary was removed at the same time for unknown reasons. She always takes cathartics at night. She has frequent spells of nausea, vomiting and malaise, with much pain in the legs, knees and arms at times. A marked symptom in this, as well as in a similar case, has been a feeling of soreness, fulness and heaviness in the cecocolon previous to and during the periods of seizure, with accompanying headache.

Physical Examination: This revealed a prominent abdomen, dilated stomach and large tender cecum. A blood analysis showed high aminonitrogen, with low uric acid, indicating loss of purin metabolism. Hepatic functional test with phenoltetrachlorphthalein intravenously showed a normal 45%, recovery.

The urine showed almost constantly high indican content, but few granular casts. Stool examinations revealed many unchanged muscle fibers and faint blood reaction.

The attacks were getting worse and more frequent; 5 or 6 every day. She is confined to bed altogether lately owing to these attacks.

Treatment: The patient has been under close observation for the last 5 years. During this time the administration of autogenous colon bacillus vaccine has had a good effect in controlling the seizures, but the patient is still subject to relapses. At the time of these relapses the best results have been obtained by proper care of the intestinal tract and renewed injections of the vaccine. A developmental reconstruction of the colon has been constantly considered and frequently urged, but so far has been unobtainable.

Case 5. — History: Mrs. F. DeN., aged 30 years, had 3 weeks previous to examination an incised wound of the finger, which healed. Two weeks before examination she had an attack of severe vomiting lasting 4 or 5 days, with

constipation. Two days before coming under observation she developed a stiffening and gradual inability to open the jaws.

Examination: This revealed a well developed and nourished woman in good mental condition, but the inferior maxilla was firmly fixed to the upper, and there was marked stiffness of the neck muscles.

There was a small insignificant healed scar on the finger. There was no distention of the abdomen, and no rigidity or tenderness there. The temperature was normal, the pulse 99. The heart and the lungs were normal. No symptoms occurred until 24 hours later, although the jaws did not relax. A convulsion then occurred with opisthotonus, complete muscular rigidity and cyanosis, and the jaws relaxed. She was given camphor and oxygen and the condition passed off in 10 minutes. Three

hours later she became suddenly completely rigid, cyanotic and died. The temperature had risen to 100.5 and the pulse to 110.

The postmortem examination revealed an omentum all curled up in an effort to wall off an infective process in the pelvis.

The peritoneum over the whole intestinal tract showed an intense inflammatory condition. Newly formed adhesions matted together the entire tract. There was in the pelvis a gangrenous loop of ileum about 20 cm in length, which was perforated in several places and covered by omental tissue.

The brain and coverings were normal except for a mild edema and congestion.

The conclusions drawn from this interesting case are that it was a toxemia resulting from the obstruction and gangrene of the intestine.

In 1908, J.W. Draper (Observations Upon a Form of Death Resulting from Operations on the Duodenum, Surg., Gynec. and Obst., May, 1906) called attention to a similarity between so-called tetany in human beings and the symptoms of duodenal obstruction in dogs, which is interesting in this connection.

We have yet to find a case in which there was not present some involvement of the sympathetic system, but in some cases this is much more pronounced then in others.

The symptoms that are most characteristic and directly attributable to irritation of the sympathetic system are:

1. The cardiac symptoms, including tachycardia and palpitation;
2. Peripheral vasomotor symptoms,
such as diminished blood supply to the skin, dry brittle hair and nails;
3. Gastro-intestinal symptoms, including disturbances of taste and smell, appetite, nausea, vomiting, changes in the secretion of the digestive juices, constipation and diarrhea,
4. Disturbances in the endocrine system, with hypothyroidism, hyperthyroidism, alteration in the secretion of the suprarenals and other glands of internal secretion.

Direct connection between intestinal conditions and disturbances in the glands of internal secretion are often highly problematic.

Of the symptoms mentioned, we find in the order of their frequency constipation, disturbances in skin nutrition, changes in the secretion, of the digestive juices, loss of appetite, ageusia, nausea, changes in the rate and rhythm of the heart, with, the subjective symptoms described by the patient as "palpitation", and the syndrome of hyperthyroidism.

The constipation may be the cause or the result of the toxemia.

In the latter case this may be due to the disturbance of the sympathetic system. It is in the disturbances of the nutrition of the skin that we see the first marked improvement from treatment. **A dry dusky skin will often become moist and clear after the intestinal toxemia is controlled.**

We have found that in all our cases of Intestinal Toxemia in which there has been a perverted Ductless Gland System, only occasional improvement has followed the administration of organotherapeutic products. On the contrary, **the symptoms coming apparently from a perversion of these glands have been improved by the treatment directed toward the intestinal tract and the intestinal toxemia as the primary cause.**

As one instance of disturbed glandular system may be mentioned a patient apparently suffering from hyperthyroidism, to whom thyroid extract was administered.

The result was a very marked hyperthyroidism. Following this some of the common antithyroid measures were adopted without result.

Subsequently the patient made a slow but good recovery under treatment for intestinal toxemia. It is a common thing to see an enlarged thyroid with symptoms of hyperthyroidism subside under the treatment for intestinal toxemia.

Conclusions

The Nervous System is almost invariably affected in whole or in part by Chronic Intestinal Toxemia.

The nervous symptoms are often the most prominent in the symptomatology. A thorough investigation of the gastro-intestinal tract is essential in cases exhibiting a chronic symptomatology of the nervous system provided the usual obvious factors of etiology of disturbances of the nervous system can be excluded.

Disturbances of the gastro-intestinal system are more often the cause of a nervous symptomatology than the result of a diseased nervous system.

In doubtful cases a proper hygiene and therapy of the intestinal tract will often be the deciding factor in differential diagnosis.

Comments

Dr. J. Russell Verbrycke, Jr., Washington, D.C.: It seems to me that the nervous system and the gastric system in autointoxication should be considered in the light of a vicious circle.

Either system can start the trouble which can then be taken up by the other, and in my experience, considering either system by itself has not resulted in curing the condition. We have to treat the autointoxication by appropriate measures, and with that we have to employ a lot.

Of suggestion to the patients to keep them encouraged. Recently, I analyzed a series of several hundred cases in which indican was persistently present, and I found on tabulating these cases that 98%, had 2 or more of the symptoms which we consider to be those of intestinal intoxications or other intoxications.

We know several characteristics of the toxins generated in the bowel.

We know they are rapid in action, and rapid in excretion.

A patient may come to us having marked symptoms of dizziness or headache and after 1 Colonic Washing the headache and dizziness may disappear; patients often go out of the office relieved.

We know, furthermore, that in addition to the rapidity of elimination the patient builds up a resistance to the intoxication, and a patient who at one time shows constant indicanuria, if he has a recurrence, though it is much less in degree than the first attack, feels it a great deal more.

The most common symptoms are referable to the nervous system, and I have found that in 67%, of the cases in which there is inability to concentrate, the analysis will show indican. In my experience patients who do not show indican invariably show régurgitation through the ileocecal valve.

These have been the most difficult to treat.

Dr. Fenton B. Turck, New York: 25 years ago when I took up research work on the alimentary tract. My experiments indicated that not only were the muscle cells the prime factors in physiologic function, but atony was closely associated with a bactériologie problem, the intestinal flora.

I found that the muscle cells which were involved undergo a degenerative change with loss of motor power pari passu with venous stasis of the splanchnic circulation.

Recently (Bulletin of the Medical and Surgical Faculty of Maryland, December 1916, and Boston Medical and Surgical Journal, 10 May 1917) I published some experimental and clinical facts showing that the individual muscle cell is the first to be acted on by the factors which produce chronic atony and dilatation.

Fatigue, distention, venous stagnation, toxic absorption and bacterial permeation serve, each in its turn, to exhaust, stretch, stifle, poison and break down the structural units that make up in their sum the muscular wall.

Tissues which have shown the atony of dilatation will demonstrate under the microscope the changes undergone by muscle plasma, and, in many cases, will give unmistakable evidence of the special action of vascular or bacterial factors.

The occurrence of colon bacilluria is often presumptive evidence of absorption in spite of the bactericidal function of the submucous tissue.

To sum up:

1. Muscular inefficiency of the gastrointestinal tract is the basis of the greater part of chronic perversion of digestive function.
2. Experimental atony and dilatation are brought about chiefly through meohanical distention, fatigue and the multiplication of the intestinal flora.
3. Microscopic sections of atonic tissue show the factors of venous stagnation and the permeation of the intestinal wall by bacteria from the lumen; muscle cells of such tissue under the microscope are seen to be in an advanced degree of degeneration. We have here biologic principles to grapple with.

Dr E. E. Smith, New York: In a paper on the "Etiology of Idiopathic Epilepsy" by Dr Herter and myself, published in the New York Medical Journal, 25 years ago, we called attention to intestinal toxemia as a causative factor in epilepsy, reaching the conclusion that seizures were determined in certain cases by the absorption of toxins from the intestinal tract.

The present views in regard to this interesting subject are conveniently expressed by 3 types which we keep in mind: First, protein sensitization is the condition which first receives our attention with those patients in whom there are skin eruptions; the second type is the arthritic case, and in these cases attention is first directed to localized foci of bacteria; the third class of cases is the type before us today, the nervous cases, in which we direct our attention to toxemia from absorption of chemical substances from the intestines.

These are not fixed types, and one condition may often be found with either of the others. Relative to the intestinal toxemia, we now know of substances formed by putrefactive processes that are entirely capable of giving rise to symptoms in the nervous system, namely, the amins, and particularly the derivatives of ethylamin. There is an exaggeration of the action of particular glands through the formation of certain of these amins, since they are similar in their pharmacologie action to the autocoids of the glandular secretions; **and we have, as a result, this perversion of the functions of the nervous system.**

If the process in the intestine goes on to a point where there is actual bacterial invasion of the tissues of the intestine, then we have a class of cases in which, in addition to Chemical Intoxication, we have Bacterial Infection.

These are the cases in which the administration of autogenous vaccines, properly prepared, are giving good results; in other words, in those cases in which we have a mixed condition of:

1. Chemical Poisoning.
2. Bacterial Infection.

Thus, **we may have in any of the conditions mixed processes that go on and give rise to and explain various symptoms."** - Dr G. Reese Satterlee, MD, Dr Watson W. Eldridge, MD, in "JAMA", 27 October 1917.

Mental Disturbance and Gastric Disease

"W. Plonies (Arch. f. Psych. and Nervenkrankh. Vol. 46), expresses the opinion that **a definite relationship exists between the nervous system and the digestive apparatus of such a character that disease of the stomach may condition mental disorders.**

Impulsive ideas as a symptom of stomach lesions were observed in upwards 53% among women in one series of statistics.

It is presumed that the mental state is induced by a Toxemia which acts more vigorously the greater the psychopathic of the individual.

He concludes that various mental disturbances other than impulsions may likewise be related to stomach disorder and that a definite relationship exists between the psychosis and gastric disorder." - in "The Medical and Critic Guide", 1920.

Chapter 56

The Violent Nature of Sepsis Poisons or Toxic Forces From the Elements of Metabolic Waste of Bacilli or Bacteria, and the Role of Septic Poisoning in Disease

"One of the great advances in medicine of the past 20 years. The effects of oral sepsis have been worked out, and prove to be so widespread, so multiple, and frequently so grave as to make us ashamed of our previous blindness to a ***common source of blood infection*** *staring us in the face all those years.* ***An addition to our knowledge of the first magnitude."*** *- Dr. Mitchell Bruce, MD in Address in Medicine, British Medical Association, 1910.*

"No one circumstance in the last 15 years that has so changed the aspect of the practice of medicine as the doctrine of focal sepsis." *- Professor Thayer, Johns Hopkins University, 1914.*

"Infection is responsible for a vast number of diseases, a fact that has received far less attention than it ought to have had. ***The immediate ravages of oral sepsis may prove serious enough, but the remote complication's, seemingly so unrelated to their true cause, are a grave menace both to health and life."*** *- Sir Berkeley Moynihan, 1927.*

"The following account of Oral Sepsis and its effects is a reprint of an article which appeared in The Practitioner of December, 1900. It is a record of personal experience, and derives any value it may have from that circumstance. It is published in this separate form in the hope that it may serve to draw additional attention to a source of disease extremely prevalent, and most egregiously overlooked." *- Dr William Hunter, MD, 1901.*

Sepsis Poisoning gives of the effects of Flu.
Pneumonia, thus, is the result.
Flu is the first notable symptom of Sepsis, and its worst symptom of Sepsis Poisoning is Pneumonia.
Sepsis can also progress to Septic Shock, a dramatic drop in blood pressure that can lead to severe organ problems, and death.

Sepsis

Forms of focal Sepsis as a cause of diseases:

1. Sepsis in Teeth, "Oral Sepsis", "Dental Sepsis"
2. Sepsis of in the Tonsils, "tonsillar sepsis."
3. Sepsis of in the Nasopharynx,
4. Sepsis of in the Nasal sinuses, "nasal sepsis."
5. Sepsis of in the Stomach, "septic gastritis."
6. Sepsis of in the Intestine, "septic enteritis."
7. Sepsis of in the Colon, "septic colitis."
8. Sepsis of in the Genito-urinary tract.

"Sepsis is playing a greater part in producing diseases than it is now doing in surgical affections.

A great field of prevention is opened up by the exercise especially of oral antisepsis against oral sepsis, the worst and parent source of most other forms of focal sepsis, especially that in the tonsils, stomach, intestine, and colon.

Gastric Effects

The effects here include all those commonly associated with, and usually ascribed to, gastric catarrh; namely:

Nausea, distaste for food, bad taste in mouth, periodic sickness, gastric pain, feelings of sinking and emptiness of stomach (only relieved by constant eating and drinking), **flatulent distension; sometimes salivation, and occasionally intestinal disturbance; all these, associated with poor nutrition, often times great depression and weakness, and with a dirty, sallow look, which are the direct effects of Septic Absorption.**

The Relation between Dental Disease and Indigestion

In the minds of most, the relation is what one may term a "mechanical" one.

Carious teeth mean imperfect mastication, consequently increased and unnecessary work for the stomach, this leading in course of time to the various ills connected with impaired digestion.

Such a mechanical relation is by no means the only, or the most important, relation of dental disease to general health.

Dental disease as a cause of indigestion in consequence of being a continual source of septic poisoning and septic gastric infection.

1. There is a limit to the capacity, even of the stomach, to resist indefinitely for periods of years the continuous presence of pyogenic (pus-forming) and other organisms derived from cario-necrotic conditions of the teeth.

2. Its powers of destroying such organisms, although great, are never complete even in health; and are due solely to the presence of free Hydrochloric Acid (HCI).

3. These powers become progressively weakened when through any cause an increased and continuous supply of pus organisms is associated with a diminished, and continually lessening acidity of the gastric juice.

4. These 2 conditions are precisely those produced by chronic cario-necrosis of the teeth.

5. In time the catarrh of the stomach, so common a sequel of imperfect dentition - possibly of simply irritant nature to begin with, the result of fermentation, becomes septic in its character, becomes really a septic gastric catarrh.

6. Eventually it may even lead to the deeper-seated changes which always result from chronic catarrh: atrophy of secreting structures, with increase of fibrous tissue (chronic gastritis with atrophy of the glands).

The continuous swallowing of mouthfuls of pus organisms is not tolerated indefinitely by the stomach mucosa." - Dr William Hunter, MD in "Oral Sepsis as a Cause of septic Gastritis, toxic Neuritis, and Other Septic Conditions: With Illustrative Cases", 1901.

The topic of "Nasal Sepsis", is addressed in the Book: "Vision the Eye Story".

The Role of Dental Sepsis in Diseases

The long term symptom of Increased Intestinal Permeability "Leaky Gut" is Traumatic Brain Injury (TBI)

Endotoxin can cross the gut wall and enter the bloodstream, called Endotoxemia, cross the blood brain barrier because there is "leaky", and at least impede recovery from injury and at worst make the damage worse.

Sepsis

Sepsis is also known as endotoxemia (presence of endotoxins in the blood), the aforementioned consequence of a leaky gut.

Sepsis and its Effects upon the Nerve System

Sepsis can cause disturbances to the organs as related to assimilation and distribution of assimilated forces in the body, as well as the excretory and secretive functions of the larger organs of the system.

If poisons from sepsis forces, arise from not being carried by the Emunctories, which are the proper channels for elimination, sepsis conditions may bring about, among other things, contractions in the muscular forces.

A contributory cause, from the poisons in sepsis, becomes a source of infectious forces that can either hinder or stop the functioning of glands as related to bodily functioning organs, as in the liver, spleen, pancreas, kidneys.

If the Emunctories are not fully functional, or over burden, and not enough drainages exist, this eventually causes sepsis poison, which in many cases can be fatal to the body.

The Relationship Between Colitis and Pyorrhoea Alveolaris

"Pyorrhea alveolaris is defined as a progressive inflammatory and degenerative change in the periodontium which is characterized by purulent discharge from the alveoli of the teeth. The condition is also known as periodontoclasia, periodontosis, suppurative pericementitis, Rigg's or Fauchard's disease.

Ivy, Morgan and Farrell fed normal dogs the soft diet which was intended for gastrectomized animals.

These animals showed early evidence of periodontal diseases and tendency toward calculus formation. King and Glover fed bread and milk or raw meat and milk to ferrets. Within 8 to 12 weeks, there was gingivitis, calculus formation, atrophic changes, and loosening of teeth.

The addition of short lengths of bone to the diet caused recovery of most of the symptoms.

Systemic infections which may have oral manifestations are endocrine dysfunctions such as hyperparathyroidism, hyperthyroidism, hypofunction of the anterior pituitary, hypofunction of the gonads etc.; allergy, blood dyscrasias such as leukemia, pregnancy, Hodgkin's diabetes, chronic low grade infections or fevers which undermine the vitality and resistance of the body; autoinfection or autointoxication, hypertension, scleroderma; increase in the alkalinity of tissue fluids and acid base and calcium phosphorous balance: rarefaction of the bone due to disturbances of calcium metabolism; and disturbances of uric acid metabolism.

Pretel and Robert state that pyorrhea is present in 50% of chronic intestinal conditions.

At the time of the writing of this paper, one patient is definitely cured of pyorrhea alveolaris, 5 patients are markedly improved, 12 are improved, and 2 patients still have to be checked.

As the colitis improved, and the bowels became normal, the improvement in the condition of the gums became apparent.

With the regulation of the intestinal function, the pus pockets in the gums collapse, the inflammatory reactions subside, the edges of the gum become more adherent to the teeth and the general trophic condition of the gum approaches that of the normal gum.

It should not he forgotten that in all the patients with pyorrhea there is a certain degree of halitosis.

This unpleasant breath odour disappears with the healing of the inflamed gum. The patients who were underweight began to put on weight, the appetite improved and the anaemia was corrected." - Dr Harry Seneca, MD, Dr John K. Karnig, DDS in "Amer. Jour. Dig. Dis.", May 1952.

Systemic Conditions in Relation to Oral Symptoms and Sepsis

"Until recently this subject had not attracted the attention of medical or even dental writers to any extent, being only now and then touched on in connection with other matters.

Lacking the aid of authority, I shall try to show its importance in daily practice and, at the same time, ask our members to look more attentively into their cases and see if the work of one of us is not worthy of more concentrated effort on our part earnestly to trace the subject better.

I refer to the teachings and papers of Dr E. S. Talbot, than whom no one has done more to bring together this joint work of the stomatologist and physician in systemic treatment for oral conditions.

Who have better opportunities for observing the detrimental effect of a brain-cramming system of education at the expense of the bony and muscular systems than the wide-awake stomatologists?

"Why do my children's teeth decay so young?" is a common question.

"I never had a tooth filled until I was 20 years old or more," says the questioner.

Look at the child with her small, delicate frame with large head, bright eyes and a highly exalted nervous system.

We are told that she is ready for high school at 13 and began day school at 41%; she does not care for sports, sits up till 9 or 10, or later, with some neighbour children, and spends 3 to 5 hours a day practicing, which excites rather than soothes the nervous system.

The amusements seem to be visiting other children, fudge parties, with late suppers and later hours for retiring, and consequently too little sleep; dancing lessons on Saturday and going to the city for a matinee.

It is one perpetual round of excitement, with no time for the daily care of the body, including the teeth, or assistance in the home duties, and far less desire to please others or be helpful to anyone but the child's immediate circle.

The tendency of the times with the immense struggle to keep the family provided for, the extremes in dress and fashions, the daily routine excitement with seldom a moment for relaxation, cannot help but ruin the finest heritage given to man, the vital structures by which his health, wealth, strength and happiness must be secured.

Prophylaxis - preventive medicine or hygiene - comes first and far above the mechanical art of dentistry, which is overdone. The crying demand of the nerves, however weak they are, to continue reacting by stimulation or excesses in food,

drinks and automobiling, is fast developing a new set of disorders in vision, bones, muscles and heart strain, to say nothing of the nervous system.

A recent recommendation of the use of the automobile (which today is seldom anything but a means for securing distance or speed instead of rest, tranquillity and change), in lung and heart diseases as a curative agent, should be carefully considered before it is accepted.

The increase in neuralgia, or so-called neurotic pains, is well known and with the present ill-devised clothing it is no wonder that the speed and wind force should cause concussion and congestions with inflammatory conditions of the various parts of the body and especially the teeth.

Again, the hurried meals at road houses, excessive in many cases for the immediate needs, on account of the increased oxygen inhalation and faulty elimination, must cause auto-intoxicatio pains or backache.

The present urging of very young people into business positions of responsibility is a detriment to many; their hurry to escape the uncongenial

atmosphere of the study rooms, and their almost universal carelessness in attending to their daily wants become a matter for thought.

Austin Flint says:

> *"The inexorable law of the survival of the fittest applies to man educated or uneducated, as well as to the lower animals, and it seems useless to educate man for work which he is physically unable to perform."*

The present rush to finish school work allows no extra time, as a rule, for broadening out in other lines, because time and money outweigh the study.

It should be remembered that the child consumes twice as much oxygen as the adult; and throws off a corresponding amount of carbonic acid; this is a gauge of its muscular activity and thus shows the need of the growing child for pure air in plenty.

All muscular exertion is an expenditure of nervous force, hence, severe mental exertion and heavy physical strain should not be under taken at the same time.

Why should children not be forced to brain activity in tender years? Because, first, the brain grows most rapidly before the seventh year; secondly, the child is called on to assimilate and appropriate enough to nourish its rapidly growing brain and body, and at the same time to make good the wear and tear of its active nature.

Is it not expecting too much of the digestive apparatus of the child to furnish material for its bodily development and, while so doing to supply food for an adult brain?

Can we expect an overworked and excited child to digest its food properly and to furnish perfect material on which to feed its starving tissues? The food question of today is a real one in view of the extreme notions in children in regard to what they must eat, especially their repugnance to green vegetables.

Is it any wonder that the first 7 years constitute a period of stress, with the brain growth, dentition, disorders incidental to infections and other childhood diseases? The rapid and great increase in the need for orthodontia, adenoid and nasal operations, the choreic (chorea, abnormal involuntary movement disorder) cases, disorders of vision and digestion, etc., are evidence of this.

Any mental strain shows itself on the teeth by increased caries as well as increased sensibility of the dentine, and especially as a cause for gingivitis and its allies, alveolitis and pyorrhea.

Overwork of any vascular part such as the overtraining of the muscles for athletic contests, will give like results on the teeth. Mental shocks are also a serious menace to general and dental health.

When brain activity is forced, a loss occurs to the system and it is called on to restore the requisite amount of phosphorus.

This is a vital component of both brain and bone in nearly equal amounts; hence, we must not forget that small doses of phosphorus produce good results in the reproduction of bone and are there fore a useful adjunct in so-called pyorrheal treatment.

Care must be taken in its administration lest it become a detriment instead of a help, and the cooperation with laxatives is necessary.

The condition of the oral cavity is a most important factor in surgery as an aid to antisepsis and sepsis.

The condition of the gingivae being important to the physician as well as to the dentist, dentists should study and know what is the healthy normal appearance, and its examination should be undertaken regularly and thoroughly.

For convenience we may classify the diseases into 2 groups:

I - Constitutional:

1. Interstitial gingivitis
2. Syphilis–Leukoplakia
3. Tuberculosis
4. Scurvy
5. Purpura hemorrhagica
6. Diabetes mellitus
7. Addison's disease
8. Stomatitis (several forms)
9. Noma
10. Ludwig's angina
11. Aphthae
12. Herpes
13. Metallic poisons (mercury, copper, lead, silver)
14. Rheumatism

II – Local:

1. Traumatic inflammation
2. Epulis, Fibroma, etc.
3. Polypi, simple hypertrophy
4. Parulis or alveolar abscess
5. Papillary and warty growths, chancres
6. Vascular or nevoid growths
7. General hypertrophy, hyperplasia
8. Carcinoma
9. Sarcoma
10. Gingivitis, interstitial alveolitis, pyorrhea

The debated question in the treatment of abscessed teeth—when not to extract—is one still in doubt. Why pus should be allowed to stay doing damage by its burrowing and sepsis in the mouth any more than in any other part of the body, seems a conundrum in these days of thorough surgical treatment.

The danger of lymphatic infection, necrosis of soft tissue and bone is not to be lightly passed over, to say nothing of the general condition of the patient. An alveolar abscess does not always burst into the labio-dental sulcus; it is more

common for those attached to the upper lateral teeth and the palatine roots of molars to burst into the palate.

Abscesses on the lower teeth sometimes pierce the inner alveolar plate and burst into the cavum oris. From the lower teeth pus may pass inward through the bone, or between the bone and its periosteum and point under the chin or among the fasciae of the neck, whence it may reach the thorax, and in its course cause the diseases known as angina Ludovici and edema of the glottis.

From a molar tooth the pus may extend along the jaw into the pterygoid region, the temporomandibular articulation, or masseter muscle, and from these may reach the brain or ear.

I have seen pus soaking backward from upper incisors, cuspids, and molar palatine roots discharging into the nasal floor, the antral cavity and cheek, forming a retropharyngeal abcess.

Ulcerative stomatitis is not a pleasant disease to deal with, especially if the patient is not of a vigorous type, and the disease is not usually found, unless by direct infection, in robust people. In adults and after exanthematous fevers in children it is more often seen, and may arise from impure food and unhygienic surroundings.

The infection almost always takes place at the necks of the teeth, causing an acute gingivitis, but, as the germs multiply and spread, it develops from a hyperemia to thrombosis of the vessels, molecular

disintegration or ulceration of the gum, and, eventually, of the periosteum and alveoli. The more acute the case, the larger will be the sloughs and the deeper

the necrosis. At the same time the absorption of the products of putrefaction

will cause pyrexia, sapremia and even, eventually, death.

The picture as presented by the gums in this condition is too well known to consider here, but it will be a wise precaution to examine such ulcerations to determine the bacterial flora (V. A. Latham: Dental Digest, February, 1906, p.127: Differential Diagnosis in Dentistry, Dental Register, 1895, p.469; Am. Med. Jour., July 1905) which is not only a wise precaution but a just one for the patient and stomatologist.

My own experience has taught me that ulcerative gingiva may have various bacteria of their own which, on general examination, without a microscopic smear or culture, would never have been thought of.

One case I remember especially in which the smear gave a typical pure pneumococcal slide, and the patient died four days later of an acute lobar pneumonia, the whole pharynx and lung showing the membranous exudate of the same type, and inoculations of the blood in guinea-pigs showing the same characters.

Another patient, who had a chicken-raising business and whom I saw in consultation, presented a condition allied to noma (gangrenous inflammation of the mouth), the whole of the oral cavity being one mass of membrane of a greenish-white colour and the lips so swollen as to be almost indefinable.

The lower lip especially, was of a blackish gangrenous colour, extending to the chin.

The temperature was 40 C., yet the patient tried to do her work under great difficulties until she became delirious, with sweating accompanied by violent rigours and chilliness.

In this case, in which the etiologic factor was not clear, the patient may have been accidentally inoculated through a hen flying up and picking her face when feeding or being lifted off the nest, as the patient remembered several such instances; or it may have been a dental infection, as her mouth was sadly lacking in hygiene. Bacterial work then was not what it is now, or I think serum treatment would have been a great help and less tedious and difficult convalescence would have been endured.

The extreme sepsis and circulatory disturbance that the patient suffered, together with the general debility and metastatic abscesses in the liver, leg and arm, rendered the prognosis very grave. Luckily, it is not a very common condition, but I have seen enough cases to make me fear the results, both from the point of view of cosmetic effects and from that of recovery.

Though ulcerative stomatitis usually occurs in children, still adults are affected and it is likely to be confused with a more recently discovered disease, that is, Vincent's angina.

As in many other diseases of the oral tissues, it is thought that certain micro-organisms play a conspicuous part in the rôle of this disease.

Froriep (Chirurgisch Kupfertafein, 1884) first called attention to the organisms resembling yeast fungi. Gravitz (Deutsch Med. W., No.15, 1889) found bacilli in nearly pure cultures, which were described by Loeffler (Deutsch Med. W., No.15,

1889) as similar to the bacillus seen in diphtheria of calves. Other investigations have confirmed the finding of this germ.

In every case a bit of the exudate should be obtained with a sterile instrument and cultures taken and smears made for immediate diagnosis, which in a few minutes can easily

be made, as no cumbersome laboratory stains are needed when the "soloids" can be had, and fresh solutions made from the tablets, as wanted; uniform results can be secured in a moment. If the diphtheria germ is present, a physician can be called and antitoxin administered without delay.

In streptococcic infections of a high degree, with much depression, serum inoculations are a great aid in cutting short the disease; also, in some pyorrheal cases, if the infection is a pure and not mixed type.

When the smear shows a spirillum type, we know we shall not succeed in cutting short the case without most vigorous therapeutic measures.

The following case, which occurred last fall in my practice, may interest some stomatologists; it shows the conditions very clearly:

History: The patient was a young man, aged 20 years, a student of good habits, a moderate smoker and a good athlete. He had been ailing for a month, had been under the care of several physicians and dentists, and was treated with caustics, gargles, etc. As the young man was getting worse, showing signs of rapid loss in weight, anemia, great pain on swallowing, and could not eat, his parents became alarmed and saw a prominent surgeon and, then, a throat specialist. Finally, the patient came into my care.

Examination: The patient was almost prostrated from the effort of walking a block and a half from the street-car, being breathless and very fatigued; he was sweating profusely; the pulse was 125, very weak and irregular; the temperature was 40 C. The breath was exceedingly offensive; the lips were swollen and it was nearly impossible to open the mouth to see the cavity and fauces (arched opening at the back of the mouth leading to the pharynx).

The mucous membranes were covered with a grayish-greenish deposit and bled on the slightest touch. The gingivae from molar to molar in both lower and upper jaw were ulcerated, especially, around the right and left superior centrals (pivot) teeth and laterals.

The centrals had the gum ulcerated to one third of the apex of the roots.

The gum about the left lateral on the palatal position was so swollen that the patient could not shut the teeth as he bit. A deep, wide pocket came from this oozing blood and pus. The right superior molar was very much diseased and there was a large plaque of dead skin on the buccal surface.

The tongue protruded trembling and was swollen, fissured, bleeding and very heavily coated. The throat, which had been sore and had been treated as if the trouble were a simple tonsillitis, on my seeing it, did not look so bad as the oral cavity.

The soft palate and uvula were slightly swollen and reddened; the left tonsil had some slimy, whitish membrane.

The posterior fauces were very red and had follicular spots, but no membrane.

The intense pain was from the swollen tongue and lips. Deglutition was nearly impossible and gargling very difficult and painful. Pain extended along the ramus to the right ear and up the side of the face, the submaxillary glands were tender, the head ached, the eyes were suffused and slight constipation was present.

Treatment: I gave the patient a swabbing and took smears and cultures on agar and blood-serum, then carefully irrigated the mouth with a warm solution of 1 to 1,000 mercuric chlorid, later, with sterilized water; then, irrigated with alphozone solution in the strength of 1 to 50, swabbed with iodin and cleansed off the loose pieces.

The patient was ordered malted milk with half cream in small quantities, and elixir digitalin compound. After a good compound cathartic pill, followed in the early morning with a laxative mineral water, the patient was kept in bed while the exhaustion was so marked, and the irrigations were kept up for 20 minutes at a time every 4 hours. After 24 hours, cupric sulphate was applied locally and washed off later; this seemed to exert a marked influence.

Then liquid antiseptic washes were applied and tincture of iodin swabbed all over. Gargling and nasal douches were continued with free purgation. After three weeks the patient gained in weight and had only 37 C of temperature.

It was with the greatest difficulty that the disease was checked completely, for if the patient failed to attend to his swabbing and douching even for 24 hours, a fresh nidus would start on the superior premolar on the left side, then on the superior cuspid and on the mucous membrane of the cheek, and only constant watchfulness kept the disease in abeyance.

The patient had a slight hacking cough.

The lungs were good except for several small areas of broncho-pneumonia, and these yielded to bed and treatment. The extreme weakness of the patient was most marked and lasted for several months after the mouth was healed.

The diagnosis was not easy; the patient and his family all thought that the disease was a direct infection from the physician who treated the throat with some application, but what they did not know.

The smears were of the greatest aid in making the diagnosis of Vincent's angina, and especially in differentiating between diphtheria and mixed infection.

The ulcerative form of angina and stomatitis may be mistaken for secondary or primary syphilitic pharyngeal ulcers: it may be taken for the latter especially when it is accompanied by marked local glandular swelling.

In the second set of smears from the reinfection there was a more suppurative condition. The findings in these mixed infections are never so characteristic as is usual in pure cases.

Usually the pathologic processes are so characterized clinically.

This is particularly important since a great variety of bacteria are found on cultural examination of the tonsillar and pharyngeal deposit.

With regard to this there is an urgent demand for a more thorough demonstration of the pathogenicity of spirilla and the fusiform bacilli.

Again, the question of the occurrence of these micro-organisms in the oral cavity of healthy people is also of special interest.

Miller has found them in healthy persons with carious teeth. Vincent (Ann. de l'Inst. Pasteur, 1899, xiii) saw some on the gums and pharynx in 14 out of 18 healthy subjects examined, and Bernheim (Ueber bacteriologischen Befund bel Stomatitis, 1898, xxiii, 177) also noted small numbers mixed with other bacteria.

In order to determine their significance positively, the determination of their degree of virulence is needed.

This, however, is difficult for either the fusiform bacillus or the spirillum, since, thus far unquestionably pure cultures, either by anaerobic or aerobic methods, have been unsuccessful.

Nicolat and Marotte did get a marked increase in the number of fusiform bacilli and spirilla in the condensation water of certain nutrient serum-media, but without pure culture. Bacteriologic proof of the pathogenicity of the spindle-shaped bacilli and spirilla has not, as yet, been positively given. Therefore, we must obtain more evidence by anatomic research or clinical observation.

The bacilli penetrate deeply and, in new localities yield almost pure smears; hence, there is a danger of recurrent attacks.

One point to remember with regard to stomatitis is that it may follow a complication of a great number of more or less grave infectious conditions, or may occur in the course of good general health; and when one has to deal with patients in whom one may suppose a more or less abundant elimination of toxins or irritants by way of the secretions, one should always examine the mouths with care; very often more or less advanced lesions will be found.

The uremic form of stomatitis is generally a serious condition: the fetor (a strong, foul smell) of the breath is very marked, strong and repulsive, even nauseating: the tongue is heavily coated white; when the renal symptoms are helped and the uremic intoxication clears, the inflammation of the buccal mucous membrane recovers quickly.

Lancereaux, I believe, was the first to describe especially the buccal uremia and Barie first traced clearly the history of these particular symptoms.

The saliva should be carefully tested in these cases for urea, which may be diminished or sometimes augmented.

Barie had a patient who produced 900 gm of saliva in 24 hours.

As is well known, normal saliva always contains a certain quantity of urea, scarcely exceeding a few milligrams, or from 2 to 3 cg., exceptionally from 20 to 50 eg.: in the pathologic state, on the contrary, as in uremia 5 or 6, and even as much as 9 gm. of urea in 24 hours has been known; the patient produces almost as much urea in his saliva as in his urine. At present our bacteriologie investigation of the scrapings of the mucous membrane has only shown a few cocci, and what the real pathologic agent of the affection is, as well as the genesis we cannot say.

Why the lower gums, particularly in the mouths of soldiers and smokers, are

more prone to attacks of stomatitis, is a subject for thought.

A most valuable remedy for fetor of the breath and many forms of stomatitis which it always accompanies is oxygenated water for rinsing the mouths, on account of its tendency to kill out the anaerobic germs which seem to predominate and give the fetid odour and which have been so often noted in typhoid fever, erysipelas, auto-intoxication in the liver and intestinal cases, syphilis, eruptive fevers, infections, purpura and tuberculosis.

The tongue has often been called the mirror of the stomach, and we may say that the mouth is the mirror of most of the infectious diseases and of the general intoxications of the body.

This is especially true in conditions of anaemia and other chronic diseases which, lately, in many countries, occurring in the practice of the physicians, have been referred to the dental specialist for a report on the existence of any septic conditions of the teeth that may be factors in the etiology, etc. I cannot do better than refer to the paper on anaemia published by Dr David Walsh (Some Points in the Modern Diagnosis and Treatment of Anemias, Med. Press and Circular, 24 September 1902) in which one of the best summaries of the subject can be found.

Who has not seen the anaemia in children most probably due to necrosed roots and abscesses?

Here is a point for discussion with the physicians and dentists as to when it is best to remove the teeth so as to avoid injury to the arch and teeth of both dentitions, and the best methods of treating such necrosed areas by the bismuth paste, etc.

The work of Dr W. Hunter has been noted in my address on oral sepsis and pernicious anaemia and its ally pyorrhea alveolaris before this Section.

The various opinions on this latter subject, alone, are enough to make any reasonable man wish something could be done to bring order out of chaos.

Mr. Henry Sewill (Med. Press and Circular, 22 October 1902) says that pyorrhea alveolaris has no connection with caries.

To this I cannot agree, for caries is certainly to be found sooner or later.

He says that it is a disease of middle life and old age only.

I believe that most of the members here have seen it in all ages.

If it is to be considered as a process of slow wasting of the alveoli and gradual shedding of the teeth, attended by slight inflammation and constant discharge of foul pus from within the free edge of the gum and alveolus, then we certainly can look for it in cases in which much hurried and forcible regulation has been done.

I have seen many cases in which the superior lateral has been forced out from an included jaw and become the seat of a typical pyorrhea, so called, even of alveolitis and a suppurating pocket when every other tooth was in a perfect condition, unfilled, and the mouth well cared for.

Those cases of long standing may cause us to wonder whether the pyorrhea has arisen from the lowered health or whether the lowered health has arisen from the depressing effect of the local disease.

(Antral suppuration may occur from alveolar infection with out the intervention

of carious teeth. In cases of alveolar pyorrhea masses of granulation tissue seen on extracted teeth, on sectioning, show a rarefying osteitis (inflammation of the substance of a bone) spreading into the bone, while the tissue farthest away from the advancing inflammation shows fibrosis.)

The great increase of crowning and bridge work which show poor mechanical judgment and poor reasoning has been, I sincerely believe, one of the greatest factors in the increase of this condition from the violent gingivitis and all its sequelae which we find almost always present except in exceptional, careful, well-fitted cases by a master hand.

I shall only call attention to the systemic points which are associated with oral sepsis as applied to mucous membranes.

Dental caries may become the exciting cause of a multiplicity of the symptoms and is itself due to 2 principal causes:

1. The anatomic location of the teeth.
2. The polypathogenic part (if I may coin the term) played by the mouth bacteria.

If the Loeffler bacillus and the tubercle bacillus, each engenders but a single disease and is truly specific, it is not so with the staphylococcus and streptococcus, which according to their virulence, their mode of entrance into the body, the phagocytic power of the person attacked, their different modes of association, and, without doubt, many other conditions which we do not know, may start on the spot a circumscribed or diffuse suppuration, **or may reach the lymphatics and cause an angioleukitis, an adenitis, adenophlegmon, or erysipelas and vast septic infiltrations of the cellular tissue, and may penetrate the veins as a phlebitis.**

Here they will deter mine a regional symptom of a septicemia or abscess of the gravest character.

The micro-organisms, if they act on the spot, first seek the alveolus (alveolodental periostitis) then the mandible (osteoperiostitis, osteomyelitis of the jaws), or conjointly bone and mucous lining. If they follow the contiguous tissues of the mouth, we get stenoparotiditis; if they penetrate through the alveolus of an upper tooth (first or second molar), maxillary sinusitis.

If they pass on to the air passages, bronchopneumonia follows.

If they enter into the digestive apparatus they produce or help to produce in people subject to chronic abscessed teeth, anaemia or so-called “dental cachexia” of Felix Lejars, (Leçons de Chirurgie, Masson. Paris, 1895, p.330) or the acid putrid intoxication of Richet. (De l'intoxication putride qui accompagne certaines fractures dites simples du maxillaire inférieur, Bull. Soc. de Chir. 1865, series 2, iii, 410-431)

Everyone who has followed the clinical evolution of the lymphophlegmonous septicemia of the neck, knows that, it may be either simple septicemia or septic pyemia.

If an incision is made in the phlegmomous parts, it is with great trouble that one will find in the deep parts a minute suppurating point comtaining only a dram or so of a secretion which may not be pus in character; or nothing at all may be found.

Here is a clear proof that we must distrust surgical infections which do not suppurate. Suppuration may be a means of defence for the organism.

In many of these severe cases death comes on very rapidly, the nerve centres being profoundly affected and not giving the brain time to react under the cellular intoxication, while the patient has a slight delirium, but depression irregularity and weakness of the pulse, respiratory insufficiency, dyspnea, toxins thrown off by sweats, diarrhoea and albuminuria." - Dr V. A. Latham, MD, DDs, FRMS, in "JAMA", 1 October 1910.

"The thing that presents itself most forcibly to me is the lack of knowledge in parents of the laws of physiology. That is, the lack of proper knowledge of the conditions under which to bring up children, and from our view-point the mouth is very important.

I have read in various works that the saliva of animals is strongly alkaline, but to go to the abattoir, apply a bit of litmus paper to the saliva of animals and find it change as quickly from acid to alkaline as it would be in a solution of bicarbonate of soda, and find this in absolutely every case, is some thing that should be considered by us. I take it that civilized environment has changed the physiology of man to almost the opposite condition.

For it is a rare thing to find human saliva more than barely alkaline.

Now, with the strong alkaline condition found in the mouths of animals, no acid decay could exist. Again, the eating of the rough food by these animals constantly rubbing against their gums. Keeps the tissues healthy and strong.

This feature is of great importance for there is a development of large rolls of connective tissue or callus at the necks of the teeth of these - animals. especially just inside of the lower front teeth.

Where the food comes in contact with the mucous membrane.

This is true in carnivora, where the teeth are conical, but not to the degree found in the herbivora; the biting with conical teeth also cleans them to the gums.

When animals are kept from their normal diet and fed on civilized food, there is a marked delicacy or softening of the gums in consequence.

I do not believe these points have been brought before our present generation strongly enough to impress them properly, and, since our teeth are not cleansed by our food and our mouths do not have this protective alkaline saliva by all means let us use the superior intelligence. Providence has given us and give our gums this hard rubbing that they need, and the mouth and tongue the proper cleansing and the result will be to the development of healthy, strong gums and good teeth.

Our intelligence should lead us to know where to begin and how to correct these defects; then we will know how to teach our children about them." - Dr M. H. Fletcher Cincinnati, MD in "JAMA", 1 Oct. 1910.

Dental Sepsis as an Aetiological Factor in Disease of Other Organs

"**The consideration of the role of dental sepsis in relation to disease of other organs is one of the most important problems in medicine.**

It is certainly true that infection of the teeth and gums, by reason of the streptococcal infection arising from them, is one of the greatest sources of disease of adult life.

The exact part played by dental sepsis in the causation of disease of other organs demands in each individual case the most careful scientific investigation.

The retention of harmful foci of sepsis in the mouth in order to preserve teeth which are a source of infection is bound to lead to impairment of health and disease of other organs.

In every case of dental sepsis one must consider not only the local conditions connected with the teeth and the effects they have produced on other organs but also the patient himself.

Bacteriological Considerations

The researches of Professor Miller, Berlin 1900, on the bacteria found in dental infections, formed the foundation of our knowledge.

He found in 12 cases of pyorrhoea no less than 20 different varieties of bacteria, amongst them streptococci, staphylococci, bacilli of various kinds, and leptothrix (gram-negative bacteria).

In this discussion we are mainly concerned with the organisms occurring in dental infections, the absorption of which or of their toxic products gives rise to general disease. There is no doubt that it is the streptococcal infections which are mainly responsible.

The streptococci found in dental infections are usually classified into 3 groups, from their behaviour when grown on media containing blood, viz.:

1. The Haemolytic Group: These decolorize blood-agar culture medium, and lake-red blood corpuscles; they cause severe toxaemia, and are found in the anaemia resulting from dental sepsis.

2. The Viridans Group: These produce a greenish colouration when grown on blood agar owing to the formation of methaemoglobin. Streptococcus salivarius is the most important member of the group as regards dental infections, and it is constantly found in the mouth. Streptococcus faecalis, another member, is occasionally found in dental infections. Both of these organisms are toxic, and may produce general toxaemic symptoms, and even malignant endocarditis. They are usually found in association with arthritis, fibrositis and rheumatic affections. They produce less severe tissue reactions than Streptococcus haemolyticus.

3. The indifferent group of streptococci are not toxic to guinea-pigs, and their association with rheumatic conditions is doubtful. Gram-negative cocci are found associated with dental infections, but they are not usually toxic, and some of these types have been described as staphylococci in earlier writings. Staphylococci are not usually found in dental infections, but often in the postnasal space.

In the infections of the teeth and gums the same streptococcus is not necessarily found in different cases, nor can the local disease be constantly transmitted from an infected patient by inoculation of the healthy gums of another person.

The infecting organisms are variable, and the infection may be mixed, so that the problem of dental sepsis is a complicated one.

The streptococci commonly associated with dental infections belong to the viridans group. These usually produce only mild local tissue reactions and a slight leucocytosis. They commonly cause general effects, such as disease of other organs.

Staphylococcal infections contrast with those of the Streptococcus viridans group in usually causing severe local tissue reactions such as boils, carbuncles, and a high leucocytosis.

They much less commonly cause disease in other organs, but may occasionally do so, as for example in osteomyelitis and malignant endocarditis.

Any of the organisms of the 3 streptococcal groups may be found in the mouth of persons in normal health.

Dental sepsis forms a good illustration of the manner in which an organism normally present in the body may cause disease when it gains access to the tissues. Similar examples may be cited.

Thus the pneumococcus found in the saliva in health may cause pneumonia. The Staphylococcus aureus constantly found on the skin may cause boils or carbuncles.

The Bacillus coli communis may cause cystitis or enteritis. It is probable that local tissue damage and possibly an increased virulence of the streptococci found in the mouth determine the occurrence of dental sepsis.

General Factors influencing the Effects of Dental Sepsis

These are:

1. The Virulence of the Organism: Just as in other pathological infections, diphtheria for example, a small lesion may produce very severe effects if the organism is virulent, while an extensive lesion with an organism of low virulence may give rise to little constitutional disturbance. It is possible that streptococci in passing from one person to another may gain increased virulence, and also the entrance of streptococci into damaged tissues may lead to an increase in virulence of the organism.

2. The Amount of Toxic Absorption: A most important factor. Everyone who is familiar with hospital. practice has been impressed by the appalling dental sepsis observable to the naked eye in patients with no constitutional symptoms arising from it. The reason must be that there is free discharge of toxic products. On the other hand, an invisible deep-seated lesion with healthy gums may be associated with the most severe constitutional effects. The "time factor" is important. If there is only slow absorption, the toxic, effects will be slighter than with rapid absorption. **The whole question is one of dosage with toxic products.** In a person in apparent health in whom slight dental sepsis is present the toxic substances produced by the streptococci must be neutralized by the body fluids, and the organisms must be ingested and destroyed by the leucocytes. It is the unneutralized toxic substance, and possibly also the organisms themselves, which cause by absorption the effects of dental sepsis in the sick person.

3. The Resistance of the Patient: A most important factor. The power of neutralization of toxic products depends on the resistance of the patient and his power of forming protective substances. As Mr. Stanley Colyer has put it, the 2 important factors are "the seed, and the soil". **Some patients, from constant absorption of toxic substance, become extremely sensitized, and a condition of Anaphylaxis results.** The recent work of Sir Almroth Wright on septicaemia is most interesting in this respect, since be has shown that in certain cases of septicaemia the patient is incapable of developing protective substances, and the leucocytes lose their property of ingesting and destroying the virulent organisms. Julius A. Toren, of Chicago, showed (Dental Cosmios, 1921) that in certain cases of dental infection and gingivitis a leucopaenia occurred, and he regarded this as an anaphylactic phenomenon and a signal of danger. He concluded that in this condition extraction of many teeth was dangerous, and advised removal of not more than one at a time. The observation has a very important practical bearing. In severe cases of dental sepsis a vicious circle becomes established. Thus the absorption of toxic products by its constitutional disturbance lowers the resistance of the patient, and so leads to spread of the local infection and the disease of other organs resulting from this infection. The importance of general hygienic conditions which will improve the resistance of the patient will be appreciated.

4. Local injury may also be an important determining factor: if dental sepsis is present, as, for example, the occurrence of progressive arthritis of the hip-joint after an injury, or the development of infective streptococcal endocarditis on the damaged valves of a rheumatic heart.

5. Symbiosis is an important factor: Thus, the presence of another disease such as scurvy or dysentery may lead to the rapid progression of dental sepsis. On the other hand, the presence of dental sepsis is well known to have an adverse effect in patients suffering from other diseases. Thus a septic mouth adversely affects the

prognosis in any acute disease such as typhoid fever, pneumonia, &c. In cases of pulmonary tuberculosis it has been shown by Dr. R. C. Wingfield that dental sepsis if untreated may frequently turn the balance against the patient.

6. Potential Health: The consideration of this is very important. If dental sepsis is present and no apparent harm is resulting, it does not follow that the condition may be disregarded. In such cases danger is always present. Thus in the condition of "apparent health" there is an equilibrium between the protective power of the body and the toxic absorption. Should, however, this balance be upset by the occurrence of some other disease, or some depressing influence such as chill, injury, etc., then the presence of "dental sepsis" is almost sure to assert itself and cause disease. In other words a condition of potential health, not apparent health, is to be aimed at.

Evidence for the Conclusion that the Teeth and Gums are the Source of Infection

Dental sepsis: causes a streptococcal toxaemia, and it is this which produces its manifold disease effects.

A streptococcal toxaemia: of exactly similar nature may result from many causes other than dental sepsis; thus the tonsils, nasopharynx, intestine and urogenital tract are common foci of infection in streptococcal toxaemia.

Because there is an association of certain diseases such as arthritis, pernicious anaemia, etc., with dental sepsis it must not be assumed that in any such case dental sepsis is the cause.

For example, there is at present under my care at St. Mary's Hospital a patient (aged 58) suffering from pernicious anaemia. His teeth and gums are, on clinical and radiographic examination, found to be perfectly healthy.

There is in this case a chronic antral and nasopharyngeal infection of streptococcal origin which is the undoubted cause of the illness.

Careful examination must always be made to determine if any foci of infection other than dental are present, and every case should be approached with an open mind and no preformed opinion.

The Clinical Macroscopical Signs of Unhealthy Conditions of the Teeth and Gurns

These when present will indicate dental sepsis. It must be borne in mind that little or no evidence may be apparent from an external examination of the teeth.

> *"It is not safe to judge the extent of the disease from clinical appearances only, and it is necessary to call in the aid of radiograph in order to ascertain how far bone destruction has proceeded." - Sir Frank Colyer in "Chronic General Periodontitis", 1916.*

The gums may appear healthy, and yet there may be an extensive disease of the alveolar process around the roots of the teeth, and considerable bone destruction, the involved area being heavily infected with pathogenic streptococci.

The grave clinical effects resulting from infected bone are well known, and from observation of a large number of cases which have been carefully investigated by bacteriological and radiological methods, I am strongly of opinion that the general clinical effects produced by dental infections are accounted for by the extent and nature of the disease of the bone in the neighbourhood of the teeth, rather than by disease in the gums or the teeth themselves, though these latter are the primary causes of the bone disease.

It cannot be insisted upon too strongly that in every case of illness in which the teeth may be primarily responsible - even if external appearances of the teeth and gums are healthy-a radiographic examination should be made to ensure that the alveolar process around the teeth is also healthy.

Radiographic Evidence

This will disclose the extent of the disease of the alveolar process.

The periodontal membrane of a tooth may be swollen, and the alveolus may show superficial erosion, such as occurs with advanced age.

Rarefaction of the alveolus round certain teeth may be present; but the most important evidence of all consists in the presence of necrosis of bone in a more or less spherical area around the apex of the tooth. These apical lesions are commonly called “apical dental abscesses.”

The term is a bad one, because there is no pus present, and, most important of all, they give rise to no pain.

The term “apical granulomata” has been used; this also is bad, because the microscopical appearances are not those of a granuloma.

When a tooth is extracted with an apical dental lesion, a mass of solid gelatinous substance is found adherent to the apex. This contains pathogenic streptococci and necrotic substance with very few leucocytes.

The term “peri-apical bone necrosis” would accurately describe the condition actually present.

In my opinion, the “peri-apical bone necroses”, the so-called “apical dental abscesses”, are the most serious lesions found in connexion with dental sepsis, and it is these which give rise to the gravest general disease resulting from them.

It is probable that from these lesions there is a constant flow into the blood-stream of either. virulent streptococci or their toxins, and the anatomical position of the lesions prevents an adequate supply of leucocytes and bactericidal body fluids to the part. If lesions of this kind are present the maintenance of health is obviously impossible; some serious general disease is bound to result if it has not already appeared. If a lesion of this kind be present no compromise is permissible; the affected tooth must be extracted.

An interesting point for discussion is the possibility of the dental radiograph showing the existence of active disease, and whether the presence of a clearly defined margin round the affected area of bone indicates protective resistance.

Secondary Infections

Where dental sepsis is present the streptococcal infective process may spread by direct transference of organisms to the tonsils, nasopharynx or gastro-intestinal tract. Hurst has shown in cases of anaemia associated with achlorhydria that in 100% of cases streptococci are to be found in the duodenum, and in a large proportion of these cases the streptococcal infection had a dental origin.

In cases of dental sepsis the colon almost always becomes infected with streptococci sooner or later.

Then, again, the organisms may be conveyed by the blood-stream to other parts as, for example, in malignant endocarditis of dental origin.

These secondary infections are usually progressive, and may carry forward the same toxic process, causing disease in other organs.

It can be readily understood why a disease of dental origin, for example Arthritis, may progress when the primary forms of infection or even all the teeth have been removed.

In many of such cases the intestine is acting as the secondary toxic focus.

It does not, therefore, follow that if dental sepsis is removed, the disease which has resulted from it will necessarily clear up.

This consideration emphasizes the great importance of the early recognition and removal of dental sepsis.

Dental Sepsis may be Secondary to some other Disease or Toxaemia

An excellent illustration of this is scurvy, in which marked dental sepsis is one of the earliest symptoms, and restoration of the patient to a dietary rich in antiscorbutic vitamins will lead to rapid improvement and perhaps disappearance of the dental sepsis.

The effect of mercury in causing dental sepsis is well known, and the withdrawal of the drug may be followed by disappearance of the dental sepsis.

Bacterial Diseases: such as bacillary dysentery may be followed by dental sepsis, which will abate and perhaps clear up when the primary condition is cured.

In cases in which dental sepsis is secondary the removal of the primary causal factor should be aimed at before an estimate can be formed of the amount of dental sepsis present which will require treatment.

The General Diseases caused by Dental Sepsis

Dental sepsis is a serious condition and may give rise to all the manifestations of disease which are produced by a streptococcal infection.

Thus acute streptococcal septicaemia and septico-pyaemia have not infrequently arisen from dental sepsis.

The risk of this dangerous complication must always be borne in mind in connexion with the extraction of infected teeth in patients whose resistance to streptococcal infection is low. As already mentioned, a leucopaenia is a danger signal.

Toxaemia: is commonly associated with dental sepsis.

It may be chronic, subacute, or acute.

Chronic Toxaemia is present in a great many of these cases, and in all cases where some general disease has resulted from the primary dental infection.

There is a feeling of malaise and general ill health, a tendency to exhaustion on slight exertion, a pale and muddy complexion is common, and often some general pains in the hands and feet indicate an irritation of the peripheral nerves; frequently some symptoms of fibrositis or threatening arthritis occur.

Insomnia, headache, and dyspeptic symptoms are common.

Sometimes severe wasting occurs, associated with general weakness, the patient having an appearance similar to that in chronic phthisis.

Subacute Toxaemia: may give rise to intermittent pyrexia, with general constitutional symptoms of ill health, extending over months and, years.

In some cases pyrexia and general symptoms of ill health are followed by profound acute toxaemia, and a condition of stupor, delirium, and coma results.

Local Infective Conditions resulting from Dental Infections

Such conditions as stomatitis, tonsillitis, nasopharyngeal infections, infections of the maxillary antra, cervical adenitis, and Ludwig's angina have been observed.

Blood Conditions

A secondary anaemia, mild or severe in type, to which Dr. William Hunter has given the name “septic anaemia”, is a common result of dental sepsis.

The more severe types of anaemia are associated with streptococci of the haemolytic type.

In many cases of pernicious anaemia a severe dental infection with hamolytic streptococci is present, and is one of the most important causal factors.

Leucocytosis: is commonly present, and usually the differential count approximates to the normal. It may show variations in different cases, and in the

same case at different stages of the disease. Some acute cases show a marked relative lymphocytosis.

This may be a true lymphocytosis, or simply an apparent lymphocytosis, due to a polymorphonuclear leucopania. In cases of lymphocytosis it is the large mononuclear cells which are increased.

An increase of the eosinophilia is uncommon. Two cases, however, have come to my notice.

Cardiovascular Complications

Streptococcal infections of dental origin may cause phlebitis and venous thrombosis, and also arterio-sclerosis, which is not necessarily associated with an increase in the blood-pressure. The changes in the arterial wall may give rise to narrowing of the lumen with symptoms of intermittent claudication, or even arterio-thrombosis.

Cardiac Conditions: Tachyeardia of toxic origin is often to be observed, and pericarditis, myocarditis, and myocardial degeneration may occur. Endocarditis when present may be of the simple type, such as occurs in acute rheumatism, but not infrequently dental sepsis gives rise to ulcerative endocarditis.

Five such cases have been under my care during the past 3 years; in these the origin of the infection appeared to be definitely the teeth.

Blood-Pressure

In some cases, especially those associated with gouty symptoms, dental sepsis may cause a raised blood-pressure. In other cases of the asthenic type the blood-pressure may be lowered below the normal.

Attacks of angina pectoris may occur in those cases with lowest blood-pressure just as in those with raised blood-pressure.

Respiratory Complications

The streptococcal infection may give rise to laryngitis, tracheitis, and bronchitis.

Pleurisy and empyema were described by Hunter in 1900 as possible complications.

Septic broncho-pneumonia is a serious and not uncommon complication, and it may be followed by bronchiectasis, or lung abscess.

At the present time a patient is under my care in St. Mary's Hospital suffering from abscess of the lung the result of very severe dental sepsis.

Attention has been called to the adverse influence of dental infections in cases of pulmonary tuberculosis.

Asthma is not infrequently due to a streptococcal bronchial infection and dental sepsis may be an important Aetiological factor in some such cases.

Gastro-intestinal Complications

Dental sepsis is one of the commonest causes of gastric and intestinal dyspepsia.

Hunter, in 1899, laid stress on the frequency of toxic or infective gastritis, and he then expressed the opinion that dental sepsis was the probable cause of some cases of that rare condition "phlegmonous gastritis."

Renal Complications

Nephritis has been described by many writers as sometimes resulting from dental sepsis. Pyelitis may also occur.

Liver Complications

Toxic conditions of the liver are well known to result from streptococcal infections and frequently these are accompanied by jaundice; also evidences of hepatic disturbance are observed in cases of dental infection.

There can be no doubt that hepatic efficiency is often impaired as the result of the toxmemia from dental sepsis. Catarrhal Jaundice (so-called) may be caused by dental sepsis setting up a hepatitis from streptococcal infection which leads to obstruction of the smaller bile ducts.

Skin Complications

Rashes of an erythematous, urticarial, papular, and eczematous type have been observed. Purpuric rashes may occur, especially where the streptococci are of the haemolytic type.

Lupus erythematosus has been recorded in association with dental sepsis, the removal of which has resulted in marked improvement and in some cases in cure of the skin condition. Dr Graham Little and Sir Frank Colyer have recently had under treatment a case of alopecia areata in which the condition appeared to be definitely due to dental sepsis.

Eye Complications

Conjunctivitis, iritis, irido-cyclitis, episcleritis, keratitis punctata, retrobulbar neuritis have all been described as resulting from dental infections.

Undoubtedly vascular lesions, such as thrombosis of the central artery or vein of the retina, may be so caused.

Of special interest is retinitis.

Dr Batty Shaw, MD in "The Significance of Vascular and other Changes in the Retina in Arterio-sclerosis and Renal Disease", Proceedings 1923, **has called attention to the great importance of the toxic factor in this condition, and undoubtedly dental sepsis is not infrequently the cause.**

Nervous Diseases

The toxaemia from dental infections may give rise to cerebral conditions such as abnormal mental states, melancholia, etc., and it is possible that inflammatory conditions, such as meningitis, may be so caused.

Diseases of the spinal cord, such as combined sclerosis with its associated anaemia, disseminated sclerosis, etc., are often due to toxic causes, and dental sepsis must be included amongst these.

Peripheral neuritis may occur from the streptococcal toxaemia of dental origin, and the sensory symptoms, tingling in and numbness of the hands and feet, are of common occurrence.

Local neuritis, such as sciatica, brachial neuritis, etc., is a common result of dental sepsis, but these are better included under the fibrositis group, because the cause is rather a perineuritis than a primary involvement of the nerve fibres.

Rheumatic Conditions

In a paper published in the British Medical Journal (4 June 1921), I called attention to the great importance of infection of the teeth and gums in the causation of rheumatic conditions such as fibrositis and infective arthritis, commonly called "chronic rheumatism."

"Chronic rheumatism" appears from the Ministry of Health Reports to be the commonest disabling disease at the present day.

Fibrositis: The streptococcal infections so arising may give rise to the various forms of fibrositis, namely:

Panniculitis, Inflammatory Conditions of Fasciae, and Aponeuroses, such as occur in lumbago and myalgic conditions; Inflammations of Tendons and ligaments, such as Stiff Neck, and tender heels due to involvement of the Plantar Ligaments. Dupuytren's contractions of the palmar fascia; inflammations of tendon sheaths, arterio-synovitis; bursitis; Heberden's nodes; finger pads; fibrous nodules in subcutaneous tissue; local perineuritis and neuritis, as in sciatica and brachial neuritis. Fibrositis in some of its forms is the commonest occurrence in cases of dental and gum infections.

Non-specific infective Arthritis: which includes the forms known as rheumatoid arthritis, arthritis deformans, osteo-arthritis, and chronic villous arthritis, is generally due to a streptococcal infection.

Dr Beddard, in a discussion on the "Morbid Anatomy and Histology of Rheumatoid Arthritis", held at the Medical Society in October 1918 (Trans. Med. Soc., Lond., 1919), expressed the opinion that 90% of these cases were due to infection arising from the teeth, and my personal experience approximates to this view. It is well known that in cases of non-specific infective arthritis numerous bacteriological examinations have shown that no living organisms are to be found

in the joints. It is probable that the streptococcal toxins give rise to the inflammatory conditions.

The recent work of Dr W. E. Gye and Dr E. H. Kettle has shown that marked proliferative changes can occur in organisms such as the spleen, through the action of colloidal silica, without the presence of living micro-organisms.

Acute Rheumatism: is not commonly caused by dental infections, but several cases have been described. The organism found by Poynton and Paine in numerous cases of acute rheumatism closely resembles the Streptococcus salivarius and Streptococcuts facalis found in dental infections.

Gout

In some cases of gout dental sepsis is important, and should be removed, as far as possible, in every gouty patient.

Dr. Llewellyn has expressed the opinion that gout is the result of a toxic idiopathy to certain toxic protein substances.

Undoubtedly, the streptococcal toxins of dental origin are in not a few cases the important causative factor.

Diabetes

Streptococcal and other toxins may cause a toxic glycosuria, probably by impairment of the endocrine function of the pancreas.

Dental sepsis is, undoubtedly, a factor in the causation of glycosuria in some cases, and it should always be removed in cases of diabetes.

A rise in the carbohydrate tolerance has often been observed by me after the removal of dental sepsis in early cases of diabetes. In cases of glycosuria a toxic factor should always be sought for, and frequently dental sepsis is found to be the cause of the condition.

In such cases removal of the dental sepsis is essential and should form one of the first elements of the treatment. In a number of cases under my care this procedure has been followed by a disappearance of the glycosuria.

It seems probable that diabetes mellitus is caused in some cases by the irrecoverable damage to the islets of Langerhans by the toxic absorption from dental sepsis.

Hyperthyroidism

An excessive activity of the thyroid gland may undoubtedly result from a streptococcal toxaemia.

In 1 case under my care a tonsillar streptococcal toxaemia gave rise to enlargement of the thyroid gland, rapid pulse and other symptoms of hyperthyroidism. Enucleation of the septic tonsils was followed by a complete disappearance of the symptoms.

In an analysis of 100 consecutive cases of dental sepsis giving rise to disease in other organs, hyperthyroidism was observed by myself in 4 cases.

Dental sepsis is usually regarded as one of the aetiological factors in exophthalmic goitre.

Scurvy

This disease, due to vitamin deficiency, usually shows marked dental sepsis on its earliest appearance.

During the war over 20,000 cases of scurvy occurred amongst Indian troops in Mesopotamia, many of which I examined personally, and in almost all very marked infection of the teeth and gums was presents

The result of careful observation showed that if pre-existing dental sepsis was present in a marked degree, then such patients were very predisposed to develop scurvy.

As an illustration of the respective frequency of occurrence of disease in other organs in cases in which dental sepsis was marked and appeared quite definitely to be the important aetiological factor the following table is given.

It represents the last 100 consecutive cases I have seen (rheumatic cases are not included).

Table I

Colitis 26
Toxaemia (mild general) ….....15
Glycosuria 12
Gastritis 8
Gout.....6
Duodenal Ulcer.....5
Hyperthyroidism 4
Severe Anaemia 3
Skin Rashes 3
Cardiac Irregularity (extra-systoles)...2
Combined Sclerosis 1
Broncho-Pneumonia 1
Boils 1
Carbuncles ….....1
Appendicitis 1
Toxaemia, Acute ….....1
Venous Thrombosis and Phlebitis.....1
Septicaemia, Acute ….....1
Enteritis 1
Salpingitis ….....1
Asthma ….....1
Malignant Endocarditis ….....1
Retrobulbar Neuritis 1

Nephritis 1
Melaena 1
Arterio-Sclerosis Haemorrhage.....1

As illustrating the frequency with which dental sepsis appears as the cause of the rheumatic affections "Fibrositis" and "Arthritis" the following table represents the last 100 consecutive cases I have seen.

Table II

100 Consecutive Cases of Arthritis and Fibrositis

Source of Infection

Dental sepsis ….....72
Intestine ….....13
Tonsils 10
Urethra (gonoqoccal).....5

Types of Rheumatic Cases

Arthritis 56
Fibrositis 40
(Including 3 of brachial neuritis, 3 of sciatica, 1 of tender heel)
Acute and subacute rheumatism.....4

Treatment

1. Removal of the focus of infection, either by extraction of teeth, or suitable treatment.
2. It must be remembered that intestinal infections very frequently result from dental infection, and that these may require treatment by such methods as Plombieres Colon Irrigations, or an autogenous vaccine prepared from the streptococci found in the teeth and intestine.

Prophylaxis

The early recognition of dental sepsis and its appropriate treatment would be one of the most important factors in greatly improving the health of the nation." - Sir William Willcox, MD, FRCP in "Proceedings of the Royal Society of Medicine", 1923.

Anaphylaxis

"Anaphylaxis is a serious allergic reaction that is rapid in onset and may cause death. It typically causes more than one of the following: an itchy rash, throat or tongue swelling, shortness of breath, vomiting, light-headedness, low blood pressure. These symptoms typically come on over minutes to hours. Common causes include: Insect Bites, Stings, Foods, and Medical Trade Drugs." - in Wikipedia

"The main point I wish to make is that anaphylaxis, so far as it occurs in man, is often a graft on a preceding toxaemic condition, the result of an unwholesome regime, and that it is simpler, more radical and more efficient to deal with this and get the patient into a condition under which he can stand up to, be insensitive to, any ordinary protein, than merely to hunt for special proteins and act solely against them.

The aim should be to de-toxicate the patient by attending to all the Emunctories and make him observe a healthy life. In this way most rhinorrhoeas (free discharge of a thin nasal mucus fluid), will disappear with or without operation, according as the disease is treated late or early.

Rhinorrhoea

Paroxysmal Rhinorrhoea connotes 2 things:

1. Catarrh
2. Spasm

These are common, together or successively, to the whole respiratory tract, and, as the causes are similar, if not the same throughout, it would be short-sighted to limit consideration to the nose.

In general, they are due to toxaemia largely produced by dietetic and hygienic errors.

Laryngitis stridula and laryngismus-distinguished from each other without any oetiological reason - describe these conditions as regards the larynx: laryngismus is asthma of the larynx.

The recurrent bronchitis of children ends, unless prevented, in asthma; these are the catarrhal and asthmatic equivalents in the bronchi and bronchioles.

Acute pulmonary oedema, the paroxysmal bronchial flux of Gee, is a fulminant combination of catarrh and spasm similarly produced.

My remarks are based mainly on analysis of 850 cases of asthma.

These show that 42% begin in the first decade, usually as what is called recurrent Bronchitis, afebrile, and rightly recognized by Gee as Asthma, which it

typically becomes after a few years.

They are often preceded by attacks of laryngismus.

Manifest dietetic and hygienic errors were found in 92% of these cases of the first decade, and at least in 77% of cases beginning before the age of 50.

Of the 42% arising in the first decade over 21% gave a history of Eczema, which is catarrh of the skin produced by the same toxaemia, and curable in the same way as asthma, and in the same way as, at least, some forms of rhinorrhoea.

Cases of rhinorrhoea, laryngismus, urticaria, epilepsy, goitre and Raynaud's symptoms all turn up as more or less frequent complications of asthma - all Toxaemic.

The cause of asthma, as I stated 25 years ago, is a toxaemia resulting from carbohydrate excess, especially in respect of what are called milk foods; interfering with proper metabolism of the more complex protein molecule.

The eosinophilia, typical of asthma, laryngismus, etc., is the chemotactic reaction of the polymorphs to the acidosis so produced.

In support of this toxaemic view I can give here summary statements.

Therapeutic Results

About 75% are cured by attention to diet and hygiene, mainly outdoor exercise, treatment always provided that sources of sepsis: nasal, oral, colonic, etc., are attended to, and that sources of nasal irritation are removed.

If treated in the first decade nearly 100% should be thus cured.

The same treatment succeeds with laryngismus, eczema, and, in its early stages, epilepsy.

Haseltine, of Chicago, has come to the same conclusion as I have; and in a communication to me he writes:

> ***"The asthmatic patient is in a constant state of delicate balance between- absorption and elimination.*** *Anything that helps to throw the balance the right way will relieve him; anything throwing it the wrong nay will increase his distress. The asthmatic patient has an abnormal ethmoid. Anything that lessens ethmoid pathology will relieve him; anything that increases ethmoid pathology will increase his distress."*

Percepied said much the same thing in 1912:

> ***"A periodic spasmodic coryza, hay catarrh, asthma, are only various expressions of the widespread affections causing vasomotor spasm, and secretory disturbance of the aerial tree.*** *The name changes according to the anatomical area involved or according to the exciting cause; but it is an error to consider such manifestations as a separate entity."*

On hay fever I need say: If anaphylaxis is more applicable to any one human disorder than to another it is to hay fever." - Dr James Adam, MD in Discussion on Paroxysmal Rhinorrhoea, PRSM, 1 May 1925.

Chronic Sepsis as a Cause of Mental Disorder

"The part played by sepsis in producing nervous and mental disorders of all degrees of severity and the degree to which these can be prevented, checked, or controlled by antisepsis.

The types of mental disorders more especially concerned are those of dementia praecox (schizophrenia), manic-depressive insanity, paranoid conditions, psycho-neurosis, and toxic insanities.

These constitute the great proportion of the admissions into mental hospitals:

1. Manic-depressive insanity 50%
2. Dementia Praecox 20%
3. Toxic insanities about 15%
4. Paranoid conditions 10%
5. Psychoneurosis 5%

Rosenow (1914-16) has obtained remarkable results.

Strains isolated from the mouth and tonsils of patients suffering from particular diseases rheumatism, nyalgia, arthritis, nervous diseases, such as paralysis were found to have a remarkable specificity in their action: those from rheumatic cases producing arthritis deformans, arthritis, and myositis; those from ulcers of the stomach showing a marked affinity for the mucous membrane of the stomach and duodenum; those from the gall bladder producing cholecystitis in the animals into which they were injected.

Most interesting of all was the specificity and selective action of strains isolated from the mouth and tonsils in various nervous diseases, such strains being always recovered with special frequency from the class of nervous tissue affected by the disease.

The degree of oral Sepsis cannot be expressed in terms of "infected teeth. It must have regard to all the other conditions present of septic gingivitis, tartar deposit, ulceration and pocketing, pyorrhoea; of periodontitis and osteitis shown by recession of gums or looseness of teeth, or by thickening of alveolar margins; number of carious or necrosed teeth; number of devitalized teeth (nerves destroyed); number of teeth with gold caps or porcelain crowns, gold bridges (a very potent form of sepsis, especially in regard to its neurotoxic effects) and finally, to conditions revealed by radiographs of apical abscesses and granulomata, of buried roots, of impacted or unerupted teeth.

The amount of infection created by all these various conditions is far greater

than anything ever found in connection with infected tonsils; and also far more virulent, since it is all in connection with bone tissue, which always enhances the virulence of a septic infection.

It is this latter circumstance that adds to the virulence of nasal sinusitis and ear infection, which also can be very severe in mental cases.

This "septic psychosis" is produced by the action of toxins derived from small and apparently insignificant septic foci, chiefly in the teeth and tonsils and elsewhere. On the removal of these the whole mental disturbance may be profoundly affected, and may in many cases be made to disappear.

The removal of that sepsis in their case is imperative to a degree, as the first and most important measure of treatment applied to them." - Dr William Hunter, CB, LLD, MD Edin., FRCP, "British Journal of Psychiatry", 1927.

Relation of Aberrant Mental States to Organic Disease

"Thanks to William Hunter we recognize now the grave importance, the causal significance of small and often concealed areas of septic infection in the tonsil, the pharynx, the nasal sinuses, the prostate, the cervix uteri, the appendix, the uterine appendages, the gall bladder, and other organs.

Hunter's earlier conclusions had reference to the graver forms of anaemia, and he was the first to point out the causative associations of oral sepsis with pernicious anaemia. We are now learning the full truth of his work.

We are quick to recognize the dependence of anaemia, of glandular diseases, of certain obscure fevers, of various forms of "rheumatic" affections, of gastric and intestinal disorders, of severe affections of the kidney, and of many affections of the nervous system-from neuritis to functional nervous and mental diseases-of perhaps all forms of cardiac diseases, upon "Focal Sepsis." - Sir Berkeley Moynihan, Br, MS, President of the Royal College of Surgeons of England in "The British Medical Journal", 5 March 1927.

Focal Infection and Its Relation to the Gastrointestinal Tract

"Clinical research has in many instances confirmed the view of the discovery of a definite etiological relationship between focal infections and chronic digestive lesions. It has been shown that in many of these cases of chronic gastro-intestinal conditions foci can be demonstrated in the teeth, tonsils, or sinuses, and that removal of the focal infection makes possible more rapid healing.

It is also interesting that patients affected with peptic ulcer and other lesions, who had been entirely free from symptoms over long periods, and in whom frequent recurrences had been produced by unaccountable causes, were at times permanently relieved of these disabilities following the removal of a discovered focus of infection.

It is well known that gastro-intestinal affections rarely occur as single lesions but are usually multiple, and that such conditions as chronic cholecystitis, chronic appendicitis, and peptic ulcer arc frequently associated.

It is therefore probable that a chronic gastro-intestinal infection gradually extends throughout the entire digestive tract, and that the symptoms vary according to the sites most markedly involved in the infection as well as in their anatomical and physiological characteristics.

It is evident that infection in an organ with a small duct like the gall-bladder, or a small outlet like the appendix, might produce more marked manifestations than would arise in a large organ like the liver.

A knowledge of the nature of these infections, often involving numerous areas of the digestive tract simultaneously, will not infrequently account for the development of new symptoms or the persistence of the old.

This knowledge demonstrates also the importance of determining and removing the basic cause of the infections.

There are three pathways by which infections from the mouth may travel to the digestive tract:

1. By direct passage of the infected substance into the stomach through the process of swallowing. If the infected secretion arrives in amounts too large to be disinfected by the gastric juice direct infection of the intestinal tract may readily take place.
2. By way of the lymphatic system. The organisms and their toxins reach the lymph nodes and are partially destroyed there, but when they are of sufficient virulence and of excessive amount this no longer can be accomplished and a systemic involvement results.
3. Through the blood stream. A further route is the passage through the blood-stream of the bacteria and their toxins as septic emboli, which are arrested in the terminal capillaries of a distant digestive organ and act as secondary foci of infection.

Gastro-intestinal infections may of themselves act as foci of infection, causing secondary infection in other sites of the digestive tract or other parts of the body.

Within recent years, since more attention has been directed to chronic intestinal stasis, interest has been renewed in the relation of this condition to the infections in the gastro-intestinal tract. It must always be borne in mind that while intestinal infection may undoubtedly occur the infecting organisms in the intestine gain their entrance mainly through the swallowing of infectious matter or through infected food. It is obvious that in intestinal stasis the intestinal canal is so altered as to retain its contents unduly long.

On this account abnormal absorption of toxic matter occurs and symptoms of toxemia are produced.

McCarrison's work is of the utmost interest in this regard. In his remarkable observations of the effect of diet on both human beings and animals by feeding them with faulty food over variable periods of time, this investigator was able to produce various intestinal affections, especially the serious types of colitis and intestinal stasis.

He states that by this cause toxemia is produced, as can be demonstrated by the changes in the mesenteric glands.

Consequent impairment takes place in the protective resources of the intestinal mucosa against infective agents, and this not only leads to infection of the mucous membrane of the intestine itself but also allows the passage into the blood-stream of microorganisms from the bowel.

He points out that the health of the gastro-intestinal tract is dependent upon an adequate provision of vitamins.

Absence of these is capable of producing pathologic changes in the tract, the resultant processes being:

a. Congestive, necrotic and inflammatory changes in the mucous membrane;
b. Degenerative changes in the neuro-muscular mechanism of the tract;
c. Degenerative changes in the secretory elements of the tract;
d. Toxic absorption from the diseased bowel as evidenced by changes in the mesenteric glands;
e. Impairment of the protective resources of the gastro-intestinal mucosa against infecting agents, due to haemorrhagic infiltration, to atrophy of the lymphoid cells, and to imperfect production of gastro-intestinal juices. The impairment results not only in imperfections of the mucous membrane itself but also permits the passage into the blood-stream of microorganisms from the bowel.

Adami too points out that in consequence of intestinal stasis there results a low grade infection of the bowel. He demonstrated that the lymph nodes of the intestines of animals yield cultures of bacteria which also are present in the liver and kidneys. This is because leucocytes are constantly conveying small numbers of intestinal bacteria to the blood by way of the lymphatic system. **In healthy individuals these bacteria never accumulate as they are rapidly destroyed by the liver and spleen, but when stasis occurs an excessive number may reach the blood and collect in various parts of the body to set free toxins where they destroy neighbouring cells and cause connective tissue proliferation.**

In order that this condition may be brought about there must take place, according to Hurst; **an impaired vitality of the intestinal epithelium and consequently the symptoms of toxaemia appear, due to "disturbances of the first line of defence in dealing with poisons."**

The walls of the terminal ileum and colon present actual invasion by bacteria, with more or less marked changes in the epithelial, muscular, and peritoneal coats which can be easily demonstrated according to Smithies. **These coats actually**

thus become foci of infection.

Draper has called attention to the extensive pathological changes observed in the colon following colectomy for chronic intestinal stasis. The specimens were examined by Ewing who reports very definite gross lesions.

Pigmentation of the mucosa was noted as the most marked and constant lesion. This is recognized as a definite sign of chronic intestinal stasis.

The next important change was the pouching of the intestinal walls.

These pouches are from 1 to 2 centimetres deep with a tortuous entrance which keeps them from emptying. The walls of these pouches are thinned, the mucosa eroded and ulcerated, and they become foci of infection. Because of the destruction of the mucosa there is absorption of fluids and bacteria.

Streptococci and other pathogenic organisms thus may gain entrance into the lymph tissue of the intestine and produce further infection.

It has been maintained by some that focal infection from the oral cavity may result in producing appendicitis, cholecystitis, or peptic ulcer, and that as a consequence the bacteria in these tissues may form new foci from which proximal lymph glands become involved.

From these the infections may extend still further through the lymph channels, or blood stream. The first full report of gastro-intestinal food allergy is to be found in the monograph of Laroche, Richet and Saint-Girons, originally published in 1914 and revised in 1930.

In 1917 Cooke called attention to the frequency of digestive symptoms resulting from protein hypersensitiveness, and since then a number of outstanding publications upon this subject have appeared.

According to Andresen the gastro-intestinal manifestations of allergy are produced in 2 ways:

1. As the result of irritation directly within the digestive tract, caused by the presence of a foreign protein;
2. As the result of a general allergic reaction following its absorption.

Many gastro-intestinal symptoms, ordinarily classed as intestinal toxemias, and relieved by a diet free of meat, may be due to gastro-intestinal allergy.

Alimentary allergy may appear in any part of the gastro-intestinal tract, producing symptoms of a local or general type. These manifestations may be severe, mild, acute, or chronic. The symptoms may be so mild as to be overlooked entirely, or so violent as to threaten life. Gastro-intestinal infections rarely occur as single lesions but are usually multiple and gradually extend throughout the entire digestive tract. Intestinal stasis may play a certain role in intestinal infections, and the intestinal canal may become so altered that bacterial invasion from foci in the bowel occurs with entrance into the lymph tissue, from which further extension of the infection takes place. Instances of infectious arthritis and myocarditis secondary to gall-bladder infections have been recorded.

Summary

From clinical study it is evident:

1. A very close interrelationship exists between the digestive tract and other organs of the body.
2. That this is brought about in a number of ways: as the result of direct contact, through the nervous and vascular systems, or as the result of "toxic" processes. Any of these may act alone or in various combinations with others.
3. That whenever digestive symptoms are manifested it is important to rule out any other primary lesion for the reason that the involvement of the digestive tract may be only secondary.
4. That the human organism must always be considered in its entirety, and that whenever digestive symptoms occur a complete survey of the entire body must be undertaken. In this way alone is it possible for correct conclusions to be reached and satisfactory results of treatment to be obtained." - Dr Julius Fiedenwald, MD in "Clinics on Secondary Gastrointestinal Disorders; Reciprocal Relationships", 1938.

How Tubercle and Carcinoma Become Diffused Throughout the System

"However different the diseases may be in other respects, there is a resemblance between those due to retention of poisonous excreta, those due to poisonous matters received into the system from without, inflammations, tumours, and infectious or zymotic diseases (morbific principle acting on the system like a ferment): in this respect, namely, that in all of them the Poisonous material circulates with the blood, and tends to be deposited from the blood.

Urea comes from the effete albuminous materials of the food and of the tissues, and is either manufactured within the vessels or in the tissues occupying the intervascular spaces.

The manufacture of the essential elements of bile take place within the liver, and through the agency of the glandular tissue of that organ, whence, in cases of obstruction of the ducts, it becomes absorbed into the circulation; but whencesoever derived, and by whatever process these and other excretory matters are formed within the body, any impediment to their escape from the body by the Emunctories, designed for their removal, leads to their accumulation within the blood.

Poisons (using the word in its usual restricted sense) which come from without are all inorganic, or, at all events, unorganised, and for the most part easily diffusible; and they enter either by the mucous surface of the alimentary canal, or by the lungs, or by inoculation; and for the most part they probably enter at once into the veins, and so become rapidly diffused throughout the system.

Some portions, however, in most cases doubtless enter the circulation indirectly by means of the lymphatic system; and, indeed, there is good reason to believe

that all those which occur in solid and not readily soluble particles enter solely by the lymphatics, and therefore reach the veins only after a comparatively long period.

Inflammation, tubercle, and proliferating growths, have especially much in common.

They all of them originate in some obscure cause, generally at some particular spot, where nutritive changes take place attended with proliferation of the protoplasmatic masses there, and where, in consequence, swelling or tumour occurs.

In most cases, there is a proneness for these affections to spread locally, and to involve more and more of the surrounding tissues. And in many cases there is a tendency for what is now called generalisation to ensue; that is, either particles of the morbid protoplasm or poisonous fluids, detached from the diseased mass, are carried along the lymphatic vessels to the nearest lymphatic glands, where they excite morbid changes identical with those which gave them origin, and whence again, after a while, similar particles or similar fluids are conveyed by the efferent lymphatics to the thoracic duct, thence into the veins, and thence to the lungs and other organs, there to evoke a tertiary series of identical morbid processes.

It is thus, that local inflammation becomes septicaemia (blood poisoning): it is thus, certainly, that tubercle and carcinoma become diffused throughout the system.

No disease probably illustrates this mode of spread better than syphilis.

A patient has a chancre (lesion). In the course of 1 week or 2, the inguinal glands become large and hard; and, as we know, the infectious material of syphilis has been carried from the chancre to the glands, and produces morbid changes in them identical with those formerly occurring in the chancre.

As yet, the patient's general health is unimpaired; but, in about 7 weeks from the first appearance of the primary sore, the symptoms of secondary syphilis manifest themselves; a roseolous rash appears upon the skin; the throat becomes affected in a similar manner; and the hair falls off.

Subsequently, the so-called “tertiary” symptoms show themselves, breaking out from time to time in successive crops.

Here we have obviously:

1. The primary disease.
2. Involvement of the lymphatics.
3. The generalisation of the disease by means of the general circulation.

From syphilis to the infectious fevers is a short step.” - Dr John S. Bristowein, MD, FRCP in “Croonian Lectures On Disease And Its Medical Treatment”, The British Medical Journal, 6 April 1872.

The Cleaning System in the Brain

"Scientists have discovered a system that drains waste products from the brain. The finding may reveal new ways to treat neurodegenerative disorders like Alzheimer's disease. Our bodies remove dead blood cells and other waste through a network of vessels called the lymphatic system. The brain, however, has a different method of keeping clean. Cerebrospinal fluid cleanses brain tissue.

Scientists found that the tracer molecules flowed along a series of channels surrounding blood vessels. In the brain, blood vessels are surrounded by cells called astrocytes. These cells have projections called end feet that wrap around arteries and veins like a layer of piping.

The system uses pressure to push fluid through the brain, much faster and more efficient way to carry away waste than diffusion. Astrocytes are a type of glial cell - a class of cells that support neurons in the nervous system.

The research team named this new system the "glymphatic system" because it is similar to the body's lymphatic system and is managed by the brain's glial cells.

The scientists speculated that disruptions in the glymphatic system might lead to the buildup of harmful waste in the brain." - Meghan Mott, PhD in "National Institutes of Health", 17 Sept. 2012.

"Increasing the activity of the glymphatic system might help prevent amyloid deposition from building up, or could offer a new way to clean out buildups of the material in established Alzheimer's disease." - Dr. Jeffrey Iliff, University of Rochester.

"This work shows that the brain is cleansing itself in a more organized way and on a much larger scale than has been realized previously. We're hopeful that these findings have implications for many conditions that involve the brain, such as traumatic brain injury, Alzheimer's disease, stroke and Parkinson's disease." - Dr Maiken Nedergaard, University of Rochester.

Lymphatic Vessels in Central Nervous System

"The brain, part of the central nervous system, has blood vessels but has been thought to lack lymphatic vessels, as they have never been found.

Researchers at the University of Virginia recently discovered a series of channels that surround blood vessels within the brains of mice. This system, managed by the brain's glial cells, was termed the Glymphatic System. It moves cerebrospinal fluid, a clear liquid surrounding the brain and spinal cord, quickly and deeply throughout the brain, removing waste. They found that the vessels carried fluid and immune cells from the cerebrospinal fluid, along veins in the sinuses, and into nearby deep cervical lymph nodes.

The researchers surmise that these vessels may serve as a second step in the drainage of fluid from the brain, after it's drained into the cerebrospinal fluid through the glymphatic system." - Carol Torgan, PhD in "National Institutes of Health", 15 June 2015.

Glymphatic System: The Glymphatic System (or glymphatic clearance pathway, or paravascular system) is a functional waste clearance pathway for the vertebrate central nervous system (CNS).

Brain Cleaning System Uses Lymphatic Vessels

"How the brain clears waste and fights infections"

"Most of the body's organs remove dead cells and other waste using the lymphatic system. Lymphatic vessels run alongside blood vessels and transport out lymph, a colorless fluid containing infection-fighting immune cells and waste. Lymph is filtered through the lymph nodes and then returned back into the bloodstream." - "National Institutes of Health", 17 October 2017.

Gut Bacteria Make a Second Home in our Brains

"**The Gut-Brain Microbiome:** It is thought that gut microbiota can influence brain function and behaviour, but how that happens is still unknown. It has been proposed that bacteria can enter the brain through the blood brain barrier, and/or via nerves that innervate the gut.

Here we show the presence of bacteria in the human and mouse brain under noninfectious or nontraumatic conditions.

Bacteria were present in intracellular locations, predominantly in astrocytic end feet at the blood brain barrier, dendrites and the soma of glial cells.

They were also abundant adjacent to and within myelinated axons.

Interestingly, there were no structural signs of inflammation in any of the brains examined. It is presently unclear the route of entry bacteria take to the brain, but the evidence of them in axons and at the blood brain barrier supports previous speculation." - R. C. Roberts, C. B. Farmer, C. K. Walker, in "The Human Brain Microbiome; There Are Bacteria In Our Brains!", 2018.

The Irrigation Treatment in Severe Puerperal Sepsis (Postpartum Infections)

"Sapraemia is the implantation of saphrocytes within the uterus and the absorption of their poisons, whereas true sepsis is the implantation of pyogenic bacteria within the uterus and its attendant results.

Both conditions cause fever, chills, rapid pulse, and foul lochia, and in the early stage, both produce symptoms of equal severity.

The examination of the lochia is of uncertain value (Bumm) for the character, quantity or odour do not aid us.

Jellett says:

> *"The local symptoms of acute septic endometritis are not very clearly distinguished from those of putrid infection. The majority of cases are mixed, saphrophytic and septic."*

In view of this last statement a differentiation would seem to be well-nigh impossible. Yet, according to many writers, it is of the utmost importance.

Montgomery says:

> *"In the face of febrile disturbances of the puerperal state the first consideration must be the determination that the condition is due to septic infection. The mere fact that a woman has febrile symptoms associated with the puerperium should not lead to a diagnosis of sepsis. The condition of the patient must be carefully investigated by inspection and palpitation of the abdomen and pelvis. The absence of local manifestations should demand a microscopical investigation of the blood, for septic processes are associated with a leucocytosis and the septic organisms may be found in the blood."*

But in the beginning there may be no leucocytosis, and the absence of bacteria in the blood certainly does not exclude local sepsis.

Nor does microscopic examination of the lochia aid us, for according to Jellett and others, the infection may be mixed, and Vineberg states that the presence of pathogenic bacteria in the lochia does not warrant a diagnosis of septic endometritis.

Montgomery says:

> *"The chief danger of this condition, known as sapraemia, is that through it an excellent culture is afforded for the development of septic germs which may be present."*

Thus the early differentiation between the saprophytic and the septic infections appears well-nigh impossible. As the disease progresses the diagnosis clears itself, for the saprophytic infection soon subsides, but the weakness in waiting lies in the fact that in the mean time many of the milder infections become of the severe type.

Again, from the point of view of treatments, early diagnosis is important and delay fatal, since there is unanimous concurrence as to the desirability of removing the uterine contents in sapraemic cases, the only difference of opinion being as to how this is best accomplished, by irrigation, finger, or curette. And after all it makes little difference so long as all of the uterine contents are removed.

Vineberg speaking of "Putrid Endometritis" says:

> *"This group includes the cases of putrid decomposition of myomatous growths in the uterus or of placental or decidual residue."*

Noble is evidently opposed to the sharp curette (scraping instrument) and is a half-hearted believer in the "protecting layer of white blood cells," states:

> *"Any intra-uterine manipulation may do much harm by breaking down the protecting layers of white blood cells which have formed beneath the endometrium and open up new channels of invasion."*

It is here desirable to inquire into the nature of the puerperal uterus, particularly as to its power to resist infection and as to its power to absorb.

Undoubtedly, a clean well contracted uterus can, within certain limits, resist germ invasion, otherwise a much larger percentage of post partum infections would occur, for Bumm and Sigwart found streptococci present in the uterus following labour in from 38 to 74%, of their cases. On the other hand, every septic case bears witness of the inability of the puerperal uterus to resist the infection.

Observation indicates that when infection takes place it begins in the retained foetal products or blood clots or if the infection is primarily located in a cervical or perineal tear it gets its first foothold in the uterine cavity by implantation in these retained tissues. What evidence have we that the post partum uterus has absorbing power? Anatomically, the presence of vast numbers of arteries, veins and lymphatics. Clinically, the presence of systemic symptoms in still localized infections, sapraemia (sepsis) for example. Also, the undoubted cases of mercury and other poisoning resulting from an intra-uterine douche. Williams collected 46 cases of fatal poisoning from intra-uterine irrigation with bichloride solutions. Experimentally, methylene blue inserted within the uterine cavity promptly shows up in the urine.

I have proven this repeatedly.

Authoritatively, Noble says:

"Pyogenic (producing pus) organisms produce not only local but also general lesions. The latter result from absorption into the general circulation of the toxic products of the infectious organism or the organism itself. When toxins alone are absorbed the condition is spoken of as toxaemia. Peritonitis is also one of the gravest forms of puerperal infection although it is neither so common nor fatal as the forms in which toxaemia or bacteria play the largest part. It is extremely hard to say in some cases whether or not some necrotic material remains within the uterus in which infectious organisms are swarming and from which toxins are being absorbed."

In this connection Sinclair states the wound or absorbing surface within the uterus only differs from these (cervix and perineal injuries) because of its anatomical relations which make it the more dangerous and therefore it should receive our chief attention and if possible be more thoroughly cleaned.

Now since it appears that the uterus can and does absorb, it is evident that this absorption necessarily takes place largely from its contents, the lochia, into which it is now desirable to inquire.

Normally the lochia consists in a great part of blood.

When examined under microscope, is found to be made up of red and white blood corpuscles, epithelial cells, and shreds of degenerated decidual tissue.

It is contained in a large cavity, the uterus which drains itself only by overflowing, the patient being, of course, in bed, the uterine cavity being continually partially filled with this mixture.

Now this mixture is an ideal culture media for bacteria, and the temperature of the organ and lochia is also ideal.

Thus we have here a pernicious combination:

1. And ideal media (the lochia) for germ growth and toxin elaboration,
2. Contained in a cavity whose temperature is ideal and this,
3. In a cavity possessing unusual absorptive powers.

If absorption plays a part in puerperal sepsis, then we have here a basis for rational and efficient treatment.

According to Noble there are two types of puerperal disease, one in which the toxaemia and bacteria play the leading part, and the other in which the inflammatory lesions predominate.

Both elements (inflammatory and absorptive) are present in every case, but if in any case the poison be particularly virulent and absorption great the patient might readily die before the inflammatory symptoms manifest them selves.

Or if the toxins lacked virulency, or absorption was slight, the case might readily go on to abscess formation. (Inflammatory or lymphatic type.)

If this is true the toxaemic form must predominate in cases in which the

absorbing power of the uterus is greatest and inversely the inflammatory form in cases wherein absorption is least.

Clinically this is exactly what occurs, for in sepsis following early abortion, where the uterine surface is slight, the inflammatory form is almost invariable, while in sepsis following late miscarriage or labour at term where the absorbing surface is extensive, the toxaemic form is by far the most frequent and incidentally the most fatal.

The Irrigation Treatment

This treatment consists simply of frequent or continuous intra-uterine irrigations, not for the purpose of removing infected tissues, not as a germicide, but only to create active, positive and continuous drainage.

Bearing in mind the enormous absorbing surface of the relaxed and infected puerperal uterus, the extremely toxic nature of the lochia, and the important part absorption plays in this disease. (Lochia is the vaginal discharge after giving birth, containing blood, mucus, and uterine tissue.

Lochia discharge typically continues for 4 to 6 weeks after childbirth, a time known as the postpartum period or puerperium).

The object of this treatment is to keep the uterine cavity continually free from this poisonous lochia, thus destroying and removing that hot-bed of germ-culture and toxin formation. And, for the purpose of checking further absorption from that source.

It is given as follows: The patient is placed on a table in the dorsal position, the cervix exposed with the aid of a perineal retractor and two rubber tubes of fairly large calibre are inserted into the uterine cavity, one well up toward the fundus, the other merely beyond the internal orifice of the uterus.

These tubes should be long enough to extend some what beyond the vulva. They are held in place by a light vaginal pack.

This procedure should be practically painless.

The patient is now returned to bed. To irrigate it is merely necessary to couple a douche can to the long tube, the other acting as a return flow.

A Kelly pad or douche pan collects the return flow. For continuous irrigation, it is only necessary to keep the douche can filled. The rate of flow can readily be regulated by altering the height of the douche can.

The irrigations can be given as often as the case seems to require, and it is recommended to begin with continuous or very frequent ones.

Once the patient shows improvement the frequency can be cautiously reduced.

The nature of the irrigation solution sterile salt solution.

I see no objection to the use of mild antiseptic solutions, but strong ones are to be avoided.

It is indicated at a time when we are desperately in need of some form of treatment that offers hope, when we are practically at the end of our resources and when the prognosis is positively bad.

I desire to point out that the bacteria which lie in the tissues and vessels are in constant combat with the leucocytes and there is ample evidence that unhandicapped, the leucocytes are fully able to cope with them, for it is universally conceded that the presence of pathogenic bacteria in the blood has no perceptible influence upon the prognosis, and that pelvic suppuration which takes place in almost all cases of true sepsis except the rapidly fatal types bears ample evidence of the ability of the leucocytes to contend with the germs that find their way into the lymphatics.

It is not necessary for this treatment to check all absorption to make it of value, for if it is only partly successful it then accomplishes more than any other procedure we know of.

If it ameliorates the symptoms to any perceptible degree it is much to be desired and is, as my clinical experience leads me to believe, it checks absorption to a degree sufficient to enable the patient to tide over the critical period and to enable the leucocytes to limit further germ invasion, it is then of inestimable value.

Out of 14 cases treated by me by this method, all but 1 finally developed pelvic abscess.

This localized pus formation is now recognized as a defensive process of Nature or, as Kelly expresses it:

"An effort of Nature to rid herself of an unwelcome guest."

Bearing in mind that each of these 14 patients were in a desperate state, it would appear that the irrigations did check absorption of toxins sufficiently and thus permitted the patient to live long enough to allow the leucocytes to circumscribe and localize the invading germs.

Finally, irrigations; single, occasional, frequent or continuous, have from the time of Reculin in 1757 been used and advocated in some form or other.

Lige, Grunewald, Winkle, Schucking, Playfair, Braxton, Hicks, Schroeder, Munde, Lusk, Fritsch and numerous others have all expressed themselves upon the subject. The earlier writers employed intra-uterine irrigation much as we employ the curette, that is for the purpose of removing retained placental and decidual tissue. During the antiseptic days of surgery they were employed for their germicidal value. At the present time it is common to note the employment of a single irrigation following curettage, or the single daily irrigation during the course of the disease. But I have been unable to locate any writer who employs intra-uterine irrigations similar to the method advocated as a means of creating active positive and continuous drainage of the uterine cavity so as to rid that organ (possessing great absorptive power) of that cesspool of pathogenic bacteria and deadly toxins, (whose presence within the uterus constitutes the chief-menace to the patient), and by this means to check further absorption of toxins and to deprive the infecting process of its unlimited source of germ supply." - Dr Henry Weil, MD in "The Medical Times", May 1911.

"Chapin says that post-partum insanity is more frequently due to sepsis; that observations at the Pennsylvania Hospital for Insane strengthen this opinion; that with the introduction of strict antiseptic measures in obstetrical practice, puerperal insanity has decidedly decreased." - Dr L. Vernon Briggs, MD, Physician to the Mental Department Boston Dispensary, in "The Boston Medical and Surgical Journal", 5 January 1905.

Chapter 57

Chronic Sepsis and Mental Disease

*"**Thus the idea that there may be one basic morbid condition underlying all these psychoses will not come as a matter of surprise** to many psychiatrists. **Clinical experience has all pointed to this conclusion.** The advent of the Freudian School did not materially improve matters. As far as the established psychoses were concerned, **psycho-analysis and psycho-therapy were soon found to be of limited application.** Dr Chalmers Watson struck a more hopeful note in his contribution on "**The Role of Auto-Intoxication or Auto-Infection in Mental Disorders**" 1922, and if Dr Cotton contention proves true on more extended application, it will herald the dawn of a brighter day for those afflicted with mental disease and for the practice of psychiatry." - in "Journal of Mental Science", Vol. 69, October 1923.*

The Role of Focal Infections in the Psychoses

"Recent investigations in medicine have demonstrated the very important fact that the human organism must be regarded in its entirety, no matter what the symptoms of which the patient complains and for which the physician is consulted.

Treatment based on the symptomatology alone in a given case may be successful in the simple maladies, but **in the majority of cases the cause of these symptoms may be very remote from the region affected.**

The recognition of this principle, that a pathological condition of **one organ or region may affect some remote region**, has proved of value in determining the etiology of some of the most obscure disease processes and has revolutionized the therapy in such disease.

By a peculiar perversity the seat or origin of the infection in the organ at fault may give rise to no symptoms, and its existence may be unknown to the patient and revealed to the physician only by a complete examination of every part of the body and the employment of laboratory methods to aid in its detection.

Through the agency of the clinical pathology laboratory we have been able to reveal the presence of focal infections, and by eliminating them clear up these diseases with heretofore unknown etiology.

The doctrine of focal infection has met with considerable opposition in spite of the fact that a great deal of work has been done by various investigators.

The pioneer work of T. W. Hastings deserves special mention, and his insistence

on the value of the complement fixation tests in determining the presence of the viridans group of the streptococcus is largely responsible for the investigations which have resulted in our conviction that focal infection had a very important role in the etiology of the psychoses.

His paper "Complement Fixation Tests for Streptococcus, Gonococcus, and Other Bacteria in Infective Deforming Arthritis and Arthritis Deformans", JAMA, 1913, shows the difficulties of attempting to establish a new principle, and he is to be commended for his persistency.

His subsequent work places these reactions on a firmer basis, (except for the test for the gonococcus) the fixation tests for the streptococcus have been used in very few laboratories. His work in demonstrating the relation of infected teeth to acute and chronic articular rheumatism deserves to be placed in the first rank in experimental medicine. Billings and others have substantiated his findings.

The only criticism of the work is that of all such pioneer work—the principle was not extended to take in other sources of infection, that is, tonsils, gastrointestinal tract and genitourinary tract.

It is now recognized that while the original source of infection may be the infected teeth, these organisms may and do reach other organs, such as the stomach, intestinal tract, gallbladder, kidneys, etc., and if not eliminated from these secondary foci the removal of the infected teeth will be of no avail. This is especially true of the intestinal tract.

The recognition of the principle of masked infection has also been the means of demonstrating the close relation of the various specialties and their interdependence.

Probably psychiatry has suffered from an arbitrary isolation in this respect, and we have been guilty of looking only at the mental disease as such and have not taken the broader view that some condition other than the mental picture might exist in our patients.

Oral Infection

The necessity of cooperation between the various specialties could not be better illustrated than in dentistry and medicine. Not until recently has there been any cooperation between these branches, and even at present, in spite of the brilliant work of Hans Thoma, of the Harvard Dental School, and others of their own profession, many dentists refuse to admit any relation between dental infection and other diseases.

They resent the physician interfering with their work, and in spite of the evidence to the contrary, they continue to put in the patient's mouth expensive bridge work and to cap teeth with gold crowns without making use of the simple expedient of radiographing the tooth to see if the root is infected.

Thoma and others have emphasized the fact that no tooth should be crowned without first ascertaining what is at the apex of the root, and have called; attention to the danger of this practice in laying the foundation; for serious. trouble later on.

Another habit of the majority of dentists which should be soundly censured is that examining a patient's mouth and with out a rontgenogram of the teeth tell the patient that the teeth are "all right." In my own experience this practice has often been the result of the patient's death later on.

It is a laudable ambition on the part of dentists to save teeth, but only when it has been demonstrated that the tooth is not already infected and liable to become much worse when capped and thereby furnish an ideal culture medium for the growth of bacteria. Hardly a patient of the better class is admitted to the hospital at Trenton who has not had expensive gold crown and bridge work, and our first act is to tear it all out, for by experience we know that it is infected.

In a paper read before a joint meeting of the Mercer County Dental Society and the County Medical Society "The Relation of Alveolar Abscesses to Systemic Diseases", New Jersey Dental Journal, July 1917, I called attention to the danger of capping devitalized teeth and the value of the rontgen ray in determining apical abscesses, but my advice was not heeded.

The amount of disease, suffering and even death which is caused yearly by failing to accept this simple principle is appalling, and it is time for the dentists to realize this fact.

Of course, we see patients who have neglected their teeth and have many decayed teeth and old roots. They have not consulted a dentist and we cannot blame the dentist for this state of affairs.

But strange to say, decayed teeth do not seem to be so much to blame for diseased conditions as capped teeth. Perhaps it is because in decayed teeth there is an outlet for the bacteria and, aside from the danger of swallowing them, the bacteria are not so apt to cause trouble.

When devitalized teeth are either capped, pivoted, crowned or filled with a preexisting infection at the apex of the root, the outlet is closed up and the bacteria continue to proliferate under the ideal conditions furnished by the dentist; they seek an outlet through the porous bone tissue and there gain accessto the lymphatic system and migrate to other distant organs.

The streptococcus types occasionally invade the blood stream.

The great stumbling block to the Patient and the dentist, and to some extent the physician, is the fact that very extensive involvement of the roots of teeth can exist and be the cause of serious trouble without causing any pain to the patient.

They argue that because they have no pain in the teeth or a tooth that that tooth cannot be diseased.

Never was error more fatal, and in the cases where this fact is not recognized, the result may be fatal to the patient. The infection of these organisms is different from the acute infections so commonly seen. They are nonpus producing, cause no pain, swelling, nor fever, and cause the patient no discomfort.

Hence it is difficult to convince the patient that the tooth should be extracted.

Treating such infections successfully can be done only by an expert dentist who realizes the dangers and controls his work with frequent rontgen ray examinations.

Thoma contends that it is impossible to treat successfully these infections by any means, such as ionization or local application, and I am inclined to agree with him. If the patient's condition is serious, no time should be lost and the tooth should be extracted at once.

Great difficulty is found in a proper interpretation and reading of the rontgenogram. It will frequently give only the slightest evidence of the diseased condition and only when the bone is involved.

The abscess is always much worse than it appears to be in the picture, and we extract when there is only slight evidence which could easily be over looked.

If the gums are not perfectly healthy looking, that is, pink and firm, but are purplish, swollen, with a red line adjacent to the tooth, or swollen so that they almost cover the crown of the tooth as in the molars, the teeth should be extracted.

Often when the rontgen ray shows little if any disease at the root, there may be granulomata surrounding the tooth just below the gum or between the roots of molars, and this new tissue, which seems to be of a connective tissue type, when cultured is found to be filled with bacteria.

So we have made it a practice, after many unpleasant experiences caused by being too conservative, to extract every tooth that is at all doubtful.

The error will always be on the side of conservatism, and we have never extracted teeth which we felt should have been left in the mouth, and after showing them to the patient they have readily agreed with us.

Another serious error of the majority of dentists is the opinion that vital teeth cannot become infected and therefore should not be extracted. Many patients who might have recovered are lost by adhering to this doctrine.

A case which illustrates this point may be cited to advantage.

In the spring of 1917, a young boy, aged twenty, a patient of Dr. William A. Clark, was admitted to Mercer Hospital suffering from polyarthritis of a severe type and complicated with valvular heart lesion. He was anemic, emaciated, and in an extremely nervous condition. An examination of the teeth by the riintgen ray showed several apical abscesses and these teeth were extracted. He did not improve and soon left the hospital and the treatment was considered by us a failure. Soon after leaving the hospital he sent for me and when I saw him I was convinced that something radical should be done if his life was to be saved.

An examination of the molars showed a condition that I had not seen before.

The teeth were milky white but vital and had no fillings or evidence of decay.

The gum was swollen and almost covered the crown of the molars.

The patient remonstrated with me when I suggested that these teeth should be extracted, as the extraction of the other teeth had not benefited him. I could not tell him that extracting these 8 molars would benefit him, but I told him that nothing else would save him. Finally his family prevailed on him to have them out.

We extracted 4 at a time and the result was remarkable. He began to improve slowly and his pulse subsided from 120 to normal in a few days.

His convalescence was rapid and in the summer he was accepted in the United States Navy as a physically fit individual.

Radical Treatment Necessary

If we wish to eradicate focal infections, we must bear in mind that only by persistence, often against the wishes of the,patient and often against the advice of the dentist, can we expect our efforts to be successful.

Failures in these cases at once cast discredit on the theory when the true explanation lies in the fact that we have not been radical enough.

I have purposely gone into details regarding the elimination of oral infection, for I have learned by bitter experience that it is necessary for the physician to learn the facts and not be too dependent on the dentist for the treatment of these conditions. I am indebted to my good friend, Dr. A. W. Currie, whose teaching in the early part of my work has meant a great deal to me.

To Dr. F. S. Bird and Dr F. W Bird, of Trenton, I also am indebted for their cooperation and willingness to study these hard problems from a new point of view.

We have worked out many of these problems together, learned by our mutual mistakes, until we think that few patients will escape with infected teeth if they will heed our advice.

We would emphasize the fact that most of the focal infections due to streptococcus have their origin in the teeth, and from this source, in the course of years, the organisms reach remote organs or other structures. Some of these infections are of long duration and may have existed in childhood.

The progress is slow and insidious, and the dangerous feature is that the existence of the infection is unknown to the individual and was formerly not recognized by the physician.

That the infection is transferable by direct contact cannot be doubted and parents may innocently infect their children. I have several cases which show the same infection in both.

One is constantly reminded of the prevalence of infected teeth, and bad teeth are seen on every side.

A study of the parent's teeth may reveal some interesting facts and change our ideas of heredity, as has been the case in tuberculosis. I have seen very few cases in which I could positively eliminate the teeth as the original source of infection.

The fact that a patient has lost all of the teeth is rather an argument for the infection having its seat originally in the teeth, which was of such a type that the teeth were eventually destroyed, and the infection lodged in some other section, usually the tonsils or intestinal tract.

We must bear in mind that no matter where the infection is situated the absorption of the toxins continues, and can be eliminated only when the infection is found and eradicated.

Before giving the detail of our examinations as practised at present, it might be of interest to cite the history of one case which seemed to point to focal infection as a possible cause of the mental condition.

CASE A - A woman, aged 45, was seen in consultation in March, I913. She had had periodical attacks of rheumatism asthma and some obscure intestinal attacks called “Chronic appendicitis”.

On 1 March 1913, she had an attack of acute articular “rheumatism with fever and much pain.

Under the use of salicylates the attack subsided, and one week later there occurred a severe type of delirium and this was the condition when I saw her.

I must confess that it was the first case I had seen in which a psychosis followed rheumatism and I was somewhat puzzled, although since then several writers have described similar cases. The arthritis apparently disappeared when the psychosis developed. She became worse and two weeks later she was admitted to the State Hospital in a delirious condition.

She talked irrelevantly, incoherently and was extremely exhausted.

A diagnosis of “toxic delirium” was made and rheumatism was put down as the cause. She improved somewhat mentally, but lost forty-one pounds in weight.

The next year she improved under careful feeding and gained 36 pounds (120 pounds) and her delirium subsided.

She never became normal, but was apathetic, preoccupied and indifferent to her surroundings. She never showed any spontaneity except when visited by her husband or family.

At these times she was interested in the family and would talk about matters concerning them, but as soon as the family were gone she would relapse into the same apathetic and inert condition. She was not demented nor was she depressed, although at times she would cry without any apparent cause. She always recognized her family, but was disoriented as to time, place and persons mainly from lack of interest. She called the physician by the name of some relative and it was always the same name.

When corrected she took it good naturedly and a few minutes later made the same mistake. She was a puzzle to every one and no one seemed able to classify her condition. When we determined to apply some of the newer laboratory methods, her case was the first one to be investigated.

The fixation test for the Streptococcus viridans was positive and the condition of her teeth was investigated.

All of her upper teeth were missing except two; and many of the teeth in the lower jaw were badly decayed, and when extracted abscesses were found

on the roots and the Streptococcus viridans was found on culture. Her condition did not improve after extracting her teeth and we made the error of not investigating further for other sources of infection.

The subsequent history is of interest. Her condition did not change until 23

February 1917, when suddenly there developed a streptococcus meningitis and streptococcus bacteremia and she died on February 24. The necropsy revealed a purulent meningitis with streptococcus in the exudate and in the blood.

Many explanations could be offered in this case, but it was evident that she continued to harbour Streptococcus viridans, and for some reason the infection

became virulent, as is often the case with this organism. From the history it would appear that her mental condition was due to the toxic effects of the streptococcus, at least that is the interpretation of the case from our standpoint.

The case is interesting from the fact that it was the first case in which we could verify the action of the streptococcus both serologically and by postmortem examination. Had the fixation test proved negative when, first taken, in all probability our researches would have ended there and this paper would never have been written.

Methods of Examination

The clinical laboratory methods used by us are those that are in use in most of the progressive general hospital laboratories. We have had a good bacteriological department in our laboratory for the last ten years. and we do all the typhoid fever and diphtheria work necessary, as well as make sanitary examinations of our food and water supply.

This work is under the direction of a well trained bacteriologist, Mr. J. S. Williams, and from our experience with him for the last 10 years I have no hesitancy in stating that his work can be depended upon. We make routine examinations of the urine.

blood, faeces, and spinal fluid. Besides the usual examination of the urine, a culture is made from a sterile specimen if indicated. The faeces examination consists of the usual chemical tests for the digestive functions and a bacteriological examination for abnormal and pathological bacteria.

The difficulty of determining intestinal infection from an examination of the faeces was apparent in our early cases, but in spite of this we were able to decide, through the help of Mr. Connellan, of the Higgins Laboratory, that certain of our patients undoubtedly had intestinal infection of a chronic type.

The examination of the blood is of the utmost importance. A numerical and differential count is made in every case admitted, and besides this the fixation tests are done.

The Wassermann test of the blood is performed, and also the fixation tests for the bacteria responsible for focal infections, such as Streptococcus viridans, and Streptococcus hemolyticus, Bacillus tuberculosis, and the Connellan-King gram negative diplococcus (designated in this paper as the Connellan-King diplococcus), and in some cases the gonococcus, although we have not been able to convict this organism of any part in the etiology of the psychoses.

Cultures are made from the root cavities of extracted teeth, and, if indicated, from the tonsils and throat, also from cervical and vaginal discharges.

The usual tests of the spinal fluid, cell count, globulin content, gold solution, and Wassermann reaction are made, beside the fixation tests of the spinal fluid for the other bacteria mentioned in the preceding. We have also made cultures from spinal fluid, but with only partial results. For 2 years, under the direction of Dr Corson White, we used the Abderhalden test for the disturbances of the glands of

internal secretion. Our results have been published, and as we found that our results were uniform only in dementia praecox and epilepsy and negative in the other psychoses, we have discontinued its use as a routine examination.

We were somewhat disappointed in the fact that the manic depressive group did not show positive findings with the Abderhalden test, as we expected that it would reveal some disorders of the ductless glands.

The patients are all examined mentally and physically in the usual way.

Every patient is examined by the dentist as soon as possible. In fact, this has been our custom for the last 3 years.

Every suspicious tooth is extracted and cultures are taken.

When there is any doubt as to extracting the teeth, the teeth are radiographed. But in the majority of cases the appearance of the teeth and gums, as described under oral infection, will determine whether or not the teeth should be extracted. Infected and enlarged tonsils are removed, the tissue studied bacteriologically, and later sections are made and studied. The temperature and pulse are especially noted, as often the presence of a rapid pulse with temperature less than 38 C, may indicate or at least suggest the presence of infection and toxemia.

Types of Infection

The type of infection which has been designated "focal infection" differs essentially from the usual acute infections.

The organisms concerned do not produce pus, consequently there is no pain, swelling or evidence of inflammation in the region affected, and no discomfort to the patient.

This type of infection might be called chronic infection to distinguish it from the acute variety.

The organisms causing this type of infection are nonpus producing, but very toxic. and resemble the Klebs-Loeffler bacillus in this particular, but are not so virulent.

They are very slow growing in the tissues, and often take years to cause any serious trouble.

The principal organisms concerned in chronic infection belong to the short chain streptococcus group. Some of them are of the viridans type and others, which do not show the cultural growth of the viridans, at the same time have all the other characteristics. The gram negative diplococcus first described by J. J. King (The Conellan-King Diplococcus Infection of the Tonsil, New York Med. Journal, 1916, Further Observations on the Conellan King Diplococcus Throat Infections, JAMA 1917), and designated by him as the Connellan-King diplococcus, is the organism found most frequently in our cases.

The identity of this organism is still somewhat in doubt, but we are inclined to place it in the streptococcus group. Morphologically it resembles the Micrococcus catarrhalis, as both are gram negative diplococci, but the catarrhalis is a much larger organism.

After repeated subcultures on agar, the Connellan King diplococcus shows a tendency to form short chains and to become gram positive. Also the blood of patients with this infection will give a positive complement fixation reaction to the nonhemolytic streptococcus antigen. Dr. J. F. Anderson, of the Squibbs Laboratory, has recently identified the Connellan-King diplococcus as a type of the non hemolytic streptococcus.

Cultures of the same organism examined by the State Board of Health Laboratory have proved to belong to the nonhemolytic streptococcus group.

While this reaction is not constant it occurs quite often. Occasionally we find the Staphylococcus aureus, either alone or in combination with the Connellan-King diplococcus, concerned in these chronic infections.

Case 3 was apparently a pure staphylococcus infection. The role of the colon bacillus in producing chronic in testinal infections has recently been emphasized by G. Reese Satterlee (Autogenous Colon Vaccines in the Study, Diagnosis, and Therapy of Chronic Intestinal Toxemia, 1916), who states that under certain conditions this organism may become pathological, migrating to other organs, especially the duodenum, and cause serious trouble. We have frequently found the colon bacillus either alone or with the Connellan-King diplococcus in the stomach and duodenum, and in these cases the toxemia was of a very severe type, and the mental condition was of a severe type and of long duration. The pathogenicity of these organisms has been fairly definitely established, at least from a clinical standpoint, and I personally have had enough experience with the.

infectious and toxic characteristics of each, in patients other than those suffering from mental disorders, to be convinced that they play a very important role as‘ causative factors in a number of systemic conditions.

The great difficulty in establishing the relation of these organisms to remote pathological conditions is to be found in the fact that their presence is to a large extent masked, and their detection difficult by the ordinary methods of examination.

If we regard the psychoses as purely psychogenic in nature and origin and do not consider the physical condition of the patient of any importance, these infections will be readily overlooked. The complement fixation tests for the streptococcus group as established by Hastings has been the principal method, in fact, at first the only means we had of determining the presence of these organisms in the patients, and the necessity for eliminating such infections.

In our more obscure cases, which from the symptoms alone we were unable to classify, this reaction was the only clue to be found that threw any light on the nature of the process. Adopted as a routine examination, we soon found that many of our cases that could be definitely classified also gave a positive reaction to the fixation test, and led us to investigate further this phenomenon.

It is true that these fixation tests are not so reliable as the Wassermann reaction, and we frequently get negative reactions when the organisms are present in the body.

This has been explained by the fact of the existence of many strains of these organisms and the difficulty in obtaining antigen from enough strains to fix all the types met. Even without the fixation tests we can now determine the presence of these organisms by cultures from the tooth cavities and the tonsils and other sources.

The cases I wish to present for your consideration are 11 in number, and they represent 3 very distinct types of manic depressive insanity.

1. In the first group I have placed four cases of the severe manic type; all of the patients died in a comparatively short time after the onset of the mental symptoms. While this type is rare it is not unusual and we have had eleven cases come to necropsy in the last 10 years.

2.The second group comprises 3 cases of a mild hypomanic condition in which the patients recovered rapidly under treatment.

3. The third group consists of three cases of profound depression, 2 of the patients have recovered and the 3rd is improving.

I have added another case of an earlier period in which no laboratory investigations were made, but which is nevertheless of interest because of the unusual features presented and because it tends to support our view of the infectious toxic origin of some of these types.

Report of Cases

Case I — History: The patient was a woman, aged 36, with a rather unfavourable heredity. Her mother had an acute puerperal attack, depressive agitated in character, from which she recovered, but she also had minor attacks of depression.

An older brother died at the age of 41 in the State Hospital at Trenton 10 days after his third admission in much the same condition as the patient.

His first attack was at the age of 24 and was put down as "acute melancholia."

Another brother died after a short illness of "blood poisoning." Patient was the youngest of seven children, healthy, industrious and for fifteen years worked in a watch factory. No constitutional traits were noted and as the case was examined by one who laid great emphasis on this feature we are safe in assuming that they were absent. She was taken ill ten days before admission to the State Hospital with a "grippe cold" and had to stop work.

Six days later she suddenly became maniacal, singing, laughing, and talking in an irrelevant manner. At this time she was seen in consultation. Specimens of blood and spinal fluid were taken, also cultures from the throat, which was much inflamed. Four days later she was committed to the State Hospital, 5 April 1916.

She had no fever at first, but a very rapid pulse.

Her blood was positive to the viridans fixation test and this organism was found in the throat culture.

Examination: She was very much excited, so that a thorough examination was impossible. This manic excitement became worse, her temperature rose to 104 degrees, some involvement of the lungs developed, and she died April 17, 1916, 12 days after admission and twenty-two days from the occurrence of the cold.

A necropsy was performed and nothing of interest noted with the exception of the lungs. There was no consolidation, the right lower lobe was brownish red in colour with a large amount of fluid. A smear made at the time of necropsy showed a streptococcus, short chain type, and a culture gave pure Streptococcus viridans.

Aside from the interest in the mental picture we have here a striking example of the virulence of the viridans which caused the death of a perfectly healthy woman in twenty-two days, at the necropsy no other cause being found.

Case II — History: The patient, H. O., woman, aged 57. **For the past year she had been in very poor physical condition and somewhat nervous. On 3 February 1916, she had an attack of "grippe", and pleurisy** from which she recovered in 3 weeks, and following this attack she manifested religious ideas, became talkative, incoherent, and expansive. She wanted to be married.

Course: She was admitted March 24, 1916, 41 days after the attack of ''grippe,'' in a very excited state, showing much psychomotor restlessness, flight of ideas, distractibility, in short, a typical maniacal attack. Her physical condition suggested paresis, and that diagnosis was made at first and only changed after death as her excitement prevented a lumbar puncture. She had very bad teeth, and a week after admission a severe infection of her right cheek occurred which apparently originated from her teeth. She died 3 April, 2 months after her attack of "grippe."

The Streptococcus longus was isolated from the infected cheek and the ulcerated stomatitis was also due to this organism. Moreover, the organism was also recovered from the blood stream.

The necropsy showed endocarditis and general septicemia.

Her whole condition was apparently caused by a streptococcus infection probably originating in an alveolar abscess.

Case III – History: G. M., young Italian man, aged 26. He had been in this country 6 years and after being drafted was serving at Camp Dix. One brother was insane, another brother and 6 sisters were healthy. During the 6 years which he had spent in this country he had been healthy, working on the railroad and making a good living. He never had had any previous mental trouble, was not an excessive consumer of alcohol. In disposition he was jolly and lively and had many friends. He was sent to Camp Dix in September 1917. After being in camp for one month an ischiorectal abscess developed and he was admitted to the field hospital, 16 October 1917. About four days later he became very much excited and I was asked to see him.

At that time he exhibited a typical maniacal reaction, sang, laughed, and was inclined to be violent.

Course: I advised his transfer to the State Hospital and he was admitted October 25, 1917- He continued to be excited and violent and at times was delirious, but all through he showed a distinct maniacal reaction. He was 5 feet 8 inches in height and weighed about 180 pounds. He was very muscular and strong, so that it was very difficult to Handle him. He refused food and died November 1, 1917.

Necropsy report: The necropsy showed pus in the muscles of the chest under the mammary glands on both sides and another collection of pus in the inguinal region. The pleura was of a deep red colour, swollen and covered with a yellowish pus. The right lung showed a pneumonic condition involving the whole lung.

The intestines showed a rather severe grade of catarrhal enteritis and they were bound with adhesions.

No cultures were made, as the body was in a closed room for nineteen hours before necropsy, and the smears made did not show any tubercle bacilli, but in all the abscesses Staphylococcus aureus was found and the diagnosis of a tuberculous lesion is somewhat in doubt as the physical condition of the man was not that of a long tuberculous infection, but corresponded to an acute virulent infection as is sometimes seen in staphylococcus cases.

The diagnosis of the first two cases, namely, manic phase of manic depressive insanity, can hardly be questioned; but the third case, while presenting at first symptoms which were undoubtedly manic, soon changed to a manic delirium, and one would be justified in being puzzled by the clinical symptoms.

The following case is of such interest that we feel that we are justified in presenting it. Here the diagnosis is also in question.

Whether we call it a delirious mania or manic delirium, either of which would place it in the manic depressive group, the symptoms were distinctly manic at the onset, which was very sudden and rapidly changed to those of a manic delirium with death in seven days from the onset of the acute symptoms, although the patient had been mentally unbalanced for some time before this.

We were able to make a complete bacteriological examination in this case and found the Connellan-King diplococcus in pure culture from the lungs, stomach, duodenum, kidneys, and liver, but cultures from the brain cortex, heart blood, gallbladder, and pancreas were sterile. The cause of death can hardly be questioned and the rapidity and virulence of the infection would convince the most skeptical that the Connellan-King diplococcus is a decided pathogenic organism and not the innocuous organism that some bacteriologists claim it to be.

Case IV — History: The patient, C. C., woman, aged 43, and a trained nurse by occupation. There is nothing special in the family history. Patient had been nursing in Trenton for some years, but was considered very peculiar by all who knew her. Patient was described as a raving maniac. Condition on entrance to hospital: When admitted to the State Hospital, she was very violent, fought the

policemen and all who tried to do anything for her. She slept some, but when awake was maniacal and abusive. The second day after admission her evening temperature suddenly went up to 107.2 F., pulse to 140.

Her condition was extremely critical and she had frequent convulsions. She was at times semistuporous and at one time in a maniacal delirium. She refused to take any nourishment.

Physical examination: This showed a well nourished woman. Skin of good colour. No evidence of enlarged glands. Pupils dilated, reaction somewhat sluggish. Patellar reflexes diminished. Abdominal reflexes absent. Very marked psychomotor activity. She slept but little, even with hypnotics. The thoracic organs showed nothing unusual. Lungs negative. Pulse varied from 90 to 150, depending very much on her temperature.

Blood pressure: systolic, 140; diastolic, ninety. Examination of spinal fluid was negative; 4 cells per c.mm. Globulin negative. Wassermann negative in the blood and spinal fluid. Fixation test negative to tubercle bacillus; positive to streptococcus.

Urine: specific gravity 1.025, acid reaction, large amount of albumin, indican present, large number of hyalin and granular casts, many leukocytes. Digestive organs: Patient refused to eat or swallow anything since admission, tongue dry, teeth covered with sordes. Throat inflamed. Teeth apparently good, but considerable bridge work and many teeth capped. The patient became more delirious and was tube fed for three days. She became somewhat jaundiced. Temperature reached 105. On 8th April she died at 8:15 am.

Necropsy: This was performed at 10:30 am. On section of the body the panniculus was unusually thick and a deep lemon yellow color. Position of the abdominal organs not unusual The pleura contained no fluid. Lungs normal except for a congested area on the lower lobe on both sides. Culture from this area gave pure culture of Connellan-King diplococcus. Pericardium not unusual. Heart small, tissue normally firm.

Heart was not removed as it was thought unnecessary to interfere with embalmer.

Liver somewhat large, covered with many yellowish spots and on section showed some fatty degeneration. Cultures from liver showed pure culture of Connellan-King diplococcus. Gallbladder distended and containing a few gallstones. Pancreas was pathological in appearance. On the surface pancreatic tissue had been supplanted by connective tissue in many places. It was somewhat shrunken. Cultures from the pancreas were negative. Stomach and intestines: Cultures were taken from the stomach and duodenum before they were opened, every precaution being taken to avoid contamination.

These cultures gave pure culture of the same organism, Connellan-King diplococcus. The stomach was empty, walls were injected, rugae were smoothed out. Adherent to the walls was much thick mucus. The duodenum was considerably injected, somewhat thickened and full of thick yellowish fluid.

Cultures from the duodenum gave the same organism.

The remainder of the intestinal tract was not unusual.

Spleen was not unusual. Kidneys were enlarged, on section much bloody fluid exuded; they had the appearance of an acute hemorrhagic nephritis. Bladder somewhat distended, fluid, turbid urine. Ovaries were cystic, uterus not unusual.

Brain: The brain was normal in appearance, no granulations in the fourth ventricle. No evidence of atrophy. Pia was clear, thin, and no evidence of meningitis. Cultures taken from pial fluid and cortex were negative.

The cause of death put down was general infection by the gram negative diplococcus, which we have identified as Connellan-King. It is interesting to know that the heart blood, pancreas, gallbladder, brain and spinal fluid gave sterile cultures, while the cultures from the stomach, duodenum, liver, kidneys and lungs were positive for this organism.

Comment: With such a general infection as in this case it is evident that this did not develop from the blood stream, but through the lymphatics. The origin of the infection was undoubtedly in the teeth, with secondary infection of the other regions, which infection suddenly became virulent and caused the patient's death.

Examinations of the tissues will be made.

Had we made no bacteriological examinations in this case, the cause of death could hardly be explained, although she had acute hemorrhagic nephritis and fatty degeneration of the liver. The bacteriological examination cleared up the cause of death and also gives further evidence of the pathogenicity of the Connellan-King organism.

These 4 cases presented a typical manic reaction, but in the last 2 delirium soon followed, and the outcome was fatal because of the virulence of the infection.

We might call them cases of toxic infectious psychosis, but that would only beg the question and leave us no nearer the solution of our difficulties. If no necropsy had been performed in these cases, they would have been put down as manic depressive insanity and the cause of death, exhaustion. I have been guilty of such diagnoses and I think that many will answer to the same charge.

But the necropsy here revealed an entirely unexpected complex and I think we are justified in our conclusions that the bacteriological examination settled the cause of death, even if we have not established the fact that the mental picture was due to the infection.

At any rate, the facts are as presented and caused us to pause and consider the importance of looking further in other cases without such fatal outcome. We will admit that these cases were atypical only in so far as the outcome was unusual.

It is interesting that in seven cases of deaths in manic depressive insanity, from 1908 to 1913, in which no bacteriological examinations were made, no adequate causes of death were found, even in the two in which necropsies were performed, whereas in four recent cases in which cultures were made the cause of death was evident. In the next series of cases we can show that the infection in each case was of a mild character and the mental symptoms were correspondingly mild and should be classified as hypomanic.

The patients recovered rapidly when the source of the infection was removed.

Case V — History: C. J., man, aged 43. Well educated and for many years had been cashier of a large bank and a trusted and respected citizen. He did not drink and was considered a conservative business man. His first attack occurred in February 1915, and lasted until September. He spent 3 weeks at one time and 2 weeks later in a private hospital, and was able to continue his work, although he was continually depressed and constantly complaining of his physical condition.

He improved and was quite normal until his second attack in February 1916.

He was very nervous and irritable and went South for 3 weeks.

He was much depressed, but gradually became better.

About the middle of March 1917, his wife noticed a recurrence of his nervousness and irritability. He began to speculate and became expansive in his conversation and very extravagant in his expenditures, in fact, exhibited all the clinical features of an early paretic. He soon lost his position, as the bank recognized that he was mentally abnormal.

His habits changed and he did many things which from his training as a banker he had consistently condemned, such as giving checks when he had no deposit in the bank, and he did not realize the seriousness of his conduct. He was egotistical and domineering in his family relations and would not listen to the counsel of his wife or his friends, of whom he had a large number. He had expansive ideas and talked of the big deals he was "about to pull off."

Because his friends remonstrated with him he thought they were all against him and soon would not have anything to do with them. He was worse in the morning than at any other time, and spent a great deal of time away from his home and never gave any account of his trips. He would buy foolish and useless things, such as two major's uniforms, for which he had no possible use. He was very restless and constantly on the go. He would sleep but little and remained in his home but for a very short time. As soon as he came in and had his meals he was off again. He was able to control himself to some extent in the company of strangers, but was not tidy or particular about his personal appearance.

He drank more than usual, but was never under the influence of alcohol.

He was very profane and often obscene, which was contrary to his usual habit.

He had a general feeling of well being and would not consult a physician as he felt perfectly well. I knew him personally for over a year and finally his wife induced him to take a trip to Camp Dix, ostensibly to see the camp, but in reality to have me look him over.

Examination and Treatment: He talked as described and told how well he was, and it was with difficulty that I prevailed on him to submit to a blood examination and a lumbar puncture. His actions suggested paresis, but the physical examination revealed no signs of it. I argued with him in vain to come to Mercer Hospital and have his teeth radiographed, as I found that he had many capped teeth and considerable bridge work.

He was pleasant to me but angry with his wife for her conspiracy in getting him to me, and for a month he would not hear of me. I saw him later in his home city

and had to go to many places as he avoided me and would not keep an appointment made with his family physician.

We finally found him and I induced him to go to a physician to have his teeth radiographed, and, when the pictures were found to show apical abscesses, he came to Mercer Hospital and had a dentist extract several teeth. He was still very restless and would remain in the hospital only long enough for the dental work and then left to attend to his "big deals."

He came back later, a few days after the infected teeth were extracted, and was much quieter and more reasonable. Cultures from the alveolar abscesses gave pure Connellan-King, and this organism was found in the urine. There was also a mild nephritis which cleared up after giving the vaccine.

He soon lost his restlessness, was perfectly willing to submit to treatment and spent two months in the hospital without complaint, which was quite a contrast to his attitude a short time before. We isolated the Connellan-King diplococcus from his tooth cavities and also found the same organism in his urine.

He was given an autogenous vaccine of Connellan-King, and in this case I am of the opinion that the vaccine had some value in clearing up the acute nephritis of a mild type. The cultures from the stool were negative.

Results: The rapid disappearance of the manic symptoms, after the extraction of the teeth is noteworthy, as he was becoming worse and more difficult to manage, and his commitment to an insane hospital was seriously considered. He developed good insight into his conduct and willingly took advice as to his future movements and showed considerable remorse for his previous conduct.

He became a little depressed later and a letter from his wife a few days ago stated that he was now about normal and anxious to get to work and support his family. The relation of the focal infection to the psychosis in this case cannot be questioned, as the immediate effect of eliminating the source of infection was a rapid clearing up of his manic symptoms, followed by a mild depressive reaction which is now disappearing. He is solicitous for his wife and has lost all his former irritability and perverse conduct.

Case VI — History: The patient, V. C. L., man, aged 49. He was a successful business man and no constitutional peculiarities were present in his case except a rather jovial disposition and an optimistic temperament, which was in no wise abnormal. He was the manager of a large business and his position was one of considerable responsibility. He had many friends and was ready to help any one that needed help. He was known personally to me for some years and I did not observe any marked peculiarities.

He was a model husband and fond of his family. His first attack occurred four years ago and was characterized by a mild exhilaration. He went to a private sanitarium and in a few weeks returned to his work. His wife states that since then he has been rather variable in his moods. In the summer he was inclined to be exhilarated, and in the winter months he was more or less depressed, but never to the extent that his efficiency was impaired.

The present attack began in the summer of 1917.

He became exhilarated, overbearing and extremely talkative, mainly along expansive lines. He was unable to attend to his business and was given a vacation for several months He went to a private sanitarium, and from his extremely expansive ideas and the fact that his blood was positive to the Wassermann reaction a diagnosis of paresis was made and the family advised that he would never be well, but they were also advised to consult me for specific treatment.

He resembled the case just cited and clinically had many features of paresis but no physical signs of that disease.

The examination of the spinal fluid definitely ruled out paresis, much to the relief of the family. We also found a positive Wassermann reaction in the blood, but there was no history of syphilis and no evidence whatever of that disease.

The positive Wassermann test can be explained only by the fact that in certain infectious conditions the Wassermann reaction is occasionally positive and may be misleading. I have seen this phenomenon in several cases and have treated such cases with intravenous injections of arsphenamine (salvarsan), but without results.

The teeth were radiographed and we were somewhat disappointed when no abscesses were discovered, but we will see later that we depended too much on the rontgen rays in this case. The feces were examined by Mr. Connellan and revealed evidences of a chronic infection.

Laboratory Report: Feces examination: Color, dark brown. Odour, offensive.

Appearance, mushy mass. Reaction, acid. Concretions, negative. Bile pigment, negative. Tests for hydrobilirubin, positive. Ampelopsin, present. Trypsin, present. Indol, plus XXXX. Skatol, plus XXX. Food residue: many large meat fibres showing no digestion. Starch, negative. Fats, negative. Other forms, small amount of vegetable residue.

Blood: No red blood cells. Blood coloring matter, positive (plus XXXX). Pus, negative. Epithelium, occasional large flat. Crystals, negative. Mucus, few unstained masses. Ova, negative. Parasites, negative. Bacteria, almost totally gram positive. A pathological, unusual coccus was found.

Remarks: The findings show a toxic stool with many large meat fibres, showing no proteid digestion, heavy blood coloring reactions and the bacteria almost totally gram positive.

We found the Connellan-King diplococcus in the stool and urine, and at first we were inclined to pay very little attention to this, but from later experiences, we now believe that such findings are of some importance. When cultures are made from the stool and urine these organisms frequently occur.

Treatment: Because of the highly acid stool the patient was given alkaline rectal injections and placed on an alkaline diet. He was also made to take a modified rest treatment somewhat against his will, and steadily improved. His intestinal infection cleared up rapidly, under daily irrigations of anhydrous sodium carbonate. His hypomanic symptoms disappeared, and he soon developed insight and worried about money, whereas formerly he gave no thought of these matters, but spent it extravagantly.

He entered Mercer Hospital in November, 1917, and remained there three months, at first under protest, but after three weeks he was quiet and cooperated with the treatment. After leaving the hospital he spent several weeks in the country with his wife and was apparently in a normal mental condition.

He soon resumed work and for some months appeared normal, but gradually became a little depressed. This was not so marked as in previous attacks, and he was perfectly able to attend to business.

He did not care to go out evenings, but preferred to remain at home. He was reexamined several months later and a rather pronounced infection of the duodenum with the Bacillus coli was found, although the stomach was normal and free from infection. There was no evidence of any other infection.

Comment: It is stated in the foregoing that the rontgenograms did not reveal any apical abscesses, but from our experience with other cases of this type we were convinced that the intestinal infection present in this case had its origin in the teeth, although the rontgenograms were not positive. About 3 months after the patient left the hospital, and had been entirely normal mentally, we examined his teeth, and from the condition of the mucous membranes of his mouth and gums we decided that several molars should be extracted.

When extracted these teeth were found to have eroded roots with large granulomas around the roots just below the crown, the cultures were positive for the Connellan-King diplococcus. He had recovered from his mental attack without the removal of the infection, but the probabilities are that had the infection remained it would only be a matter of time when he would have had a recurrence.

These 2 cases are so similar that one would expect a similar infection, which was the case, only in one the intestinal infection was worse than in the other.

They were both treated in the general hospital without a nurse and very much against their wills, but the physical features of their disease were emphasized and not the mental features. And further, in both cases the condition was becoming progressively worse, so that confinement in an institution was considered as the next step.

They reacted to treatment designed to remove the source of infection. The facts are here given and cannot be entirely disregarded even if our interpretation is not accepted.

Case VII — History: The third case of this group is that of an Irish woman, single, of previous good mental health, and nothing extraordinary is found in her family history. She was the youngest of 7 children and the other members of the family are normal and earning a good livelihood, but not of a very intellectual type. In the winter of 1916 the patient had an attack of pneumonia and was taken to St. Francis Hospital, where she made a good recovery.

About a week after this attack of pneumonia and while convalescing, she suddenly developed a typical manic attack. She was in bed. with a nurse in attendance, and became exhilarated, laughing, talkative, with typical flight of ideas, rhyming and distractibility.

There was marked psychomotor restlessness, but she would remain in bed when told to by the nurse. She talked continuously and her productions could not be interrupted. She refused to answer questions, but often showed that she heard them and gave willfully misleading answers in a playful manner. She would not recognize the physician, but made rhymes with his name.

At no time was she delirious, but gave evidence that she was well oriented for place and persons, if not for time. Lumbar puncture was made several times, as it was recognized that the case was a toxic one due to the toxemia of the pneumococcus. We adopted this method, as in children we had seen after pneumonia several cases of toxemia resembling meningitis clear up rapidly after such puncture.

The case was extremely grave and for a time it looked as if she would have to be sent to the State Hospital, but in about two weeks she cleared up. Her manic symptoms were much more profound than in the other two cases in this group, as there was present more psychomotor restlessness, continual productiveness with irrelevancy and distractibility.

We are not prepared to say that the lumbar punctures were the cause of her rapid recovery, as we know that the toxemia of pneumonia is rather transitory and disappears soon after the pneumococcus ceases to be effective. She recovered fully and since that time, over 2 years ago, she has been steadily employed.

These cases are of a mild type, but the manic symptoms were unmistakable and they promptly recovered when treated as toxic conditions.

They may be called our pioneer cases and certainly pointed the way for our future consideration of this group as well as the more depressed types. Another case may be mentioned briefly as it added further evidence of the infectious nature of this group. The case was one of a young woman with an acute manic condition following childbirth. She had definite symptoms of infection, rather high temperature, etc. A member of our staff, Dr. James P. Sands, on his own initiative, gave her several doses of antistreptococcic serum and she promptly recovered and left the hospital in a short time.

Group III

In this group we have taken, as examples, types with a more profound psychosis of longer duration and much more resistant to treatment. The usual type is one of depression and we all know these types are apt to run a much longer course than the manic type, and tend to become chronic, especially in the later years of life.

Case VIII — History: O. W., a single girl, aged 25, had good mental endowment, although the family history is bad from one point of view. Her father committed suicide ten years before, although he was considered normal and a successful business man. Her mother was somewhat oversolicitous about the girl, her only child. She had been sheltered and treated as a child even at this late date, but

apparently she did not resent this when normal.

She was an exceptional student, learned easily and was much interested in her studies. She graduated from the normal school and in 1913 travelled abroad.

Her mother accompanied her abroad. She was not a robust girl and was inclined to be anemic, and as her mother had had tuberculosis she necessarily was anxious in regard to her daughter. In the fall of 1915 she accepted a position in a school in the northern part of the State to teach, and was very much elated and proud of the fact that she was about to realize her ambition.

During the summer she had not been so well as usual and the doctor told her she had malaria, but it was a questionable diagnosis, as she had no chills, but some fever and malaise. She started to teach in October and did very well for a time, but she was kept very busy with her work and spent considerable time preparing the lessons after school hours and at night.

She had a heavy cold or "grippe," and her temperature was never normal in the evening. At first she did well, but soon her mother noticed that she seemed to be under constant nervous tension. She found that she could not concentrate her mind on her work and that the discipline was getting beyond her. She had to give up her work and two weeks later came to Trenton.

She talked continually of her work and at first had mild self- accusatory ideas which became much more prominent later on. She realized that she was not right, claimed that she had lost her memory and all that she had learned. She had a very poor appetite and lost ten pounds in a very short time.

She was extremely nervous and had frequent vomiting spells and other gastrointestinal symptoms.

She had expressed ideas of suicide. She was much depressed and thought that she was no more good in the world and for this reason she wanted to do away with herself and relieve her mother of the burden of caring for her. She was staying at a house in Trenton near the railroad, and her physician, Dr. William A. Clark, had made an appointment for-a consultation with the writer for 10 o'clock.

At 8 o'clock she slipped from the house, ran to the bridge, threw herself over and fell about twenty feet, landing on the track, and sustained Serious bruises, but no injury. She was immediately taken to Mercer Hospital and I saw her a few hours later. She was very much confused and agitated. She had very pronounced ideas of self accusation and negation.

She thought she was no more good, had lost her training, and was only a burden. She recovered from the effects of her fall, but her mental condition grew steadily worse and she had to be constantly watched to prevent her from committing suicide.

Examination: Nothing was found in the physical examination except an extremely rapid pulse and a slight rise of temperature in the afternoon. She was much under weight and presented the appearance of a seriously sick person. She was admitted to the Mercer Hospital 10 November 1915, and remained there until April, 1916. Her blood was negative to the fixation tests, and the Abderhalden reaction (identification of a foreign protein in the blood) was positive for the

thymus gland. Treatment was instituted along the lines recommended by Doctor Ludlum, who saw her in consultation.

She was given 5 grains of pituitary extract daily and daily readings of the blood pressure were made. She did not respond to this treatment and after a thorough trial it was discontinued. From the marked tachycardia and the slight rise of temperature I came to the conclusion that her condition could be better explained on the basis of an infectious process, although this was the first case in which I had come to any such conclusion.

She was growing worse instead of better, and it looked like a possible chronic type. She had persistent nihilistic ideas and a feeling that she would never be any good and wanted to die, and only by the closest watching was she prevented from carrying out her suicidal desires.

Treatment and Results: We began to give her colonic irrigations daily and cultures of the Bulgarian bacillus, as an examination of the feces showed evidence of intestinal intoxication and a streptococcus was isolated that belonged to the viridans group and was present in much larger amounts than normal. She was given an injection of antistreptococcus serum and had a severe reaction, developing a rash that looked like the rash in serum disease, so it was not continued. After this eliminative treatment was given for some time she seemed to improve gradually and was able to leave the hospital in April, 1916, 5 months after admission.

She went south the following winter and since a short time after leaving the hospital she has been entirely normal, and is living with her mother in perfect harmony and has had no return of her psychoses.

Comment: I realize that this case may be criticized as not conforming to the rules that would definitely place it in the infectious group, and that the patient might have recovered, as so many do, without any treatment directed to the infection and its elimination.

We realize that our methods at the time were very crude and inconclusive, and it was extremely difficult to establish the fact of the infection. Happily, we now are able to demonstrate the infection much more satisfactorily. Her teeth were not examined very carefully, and as caps existed we made the error of not having them radiographed.

Case IX — History: J. H. a man of 60 years; he had no children. He was always healthy until 6 years ago. At that time he became depressed and agitated. He was sleepless and complained of a peculiar sensation in his head as if there were some extreme tension, and when these feelings came over him he would become very much agitated and restless, walking up and down the room.

He was unable to concentrate on his work or attend to his business. He had some eye trouble diagnosed as glaucoma, and his condition became worse when he had these attacks. He spent some time in private sanatoriums and became worse instead of better. He was seen in the fall of 1916. At that time he was in a serious condition and had been unable to attend to his work for some months.

Examination: A complete examination was made and from the-laboratory examination it was found that he had a positive fixation test for the viridans in both the blood and spinal fluid. Ront-genographs of the teeth showed many apical abscesses and considerable pyorrhea.

He objected to having his teeth extracted at first, as he could see no relation between his infected teeth and his mental condition. He finally consented and cultures made were found to be viridans. He had chronic constipation and we found the viridans in his stool. He did not improve at once and was somewhat annoyed that he had allowed his teeth to be extracted.

Treatment and Results: A vaccine from the viridans was given him and he was very slow in responding. He soon began to sleep better and did not wake up at three and four o'clock and pace the floor as he had been doing. During the summer he was very little better and went to the seashore.

He had some serious business troubles and these worried him considerably. The following fall he came out of his depression and rapidly improved. He lost the worried, careworn expression which had been habitual with him. He was very active, took renewed interest in his business and told everyone how much he had improved. He is now attending to his business daily and normal.

Comment: This case can be considered one in which the psychosis was directly connected with the infection of his teeth, which infection, as is usual in such cases, was of many years duration and finally the toxemia invaded the nervous system, and-to those familiar with the actions of toxins it does not stretch the imagination to assume that the psychosis was the result of the toxemia. There were no obvious psychogenic factors, and nothing in his constitution which would account for his psychosis.

Case X — History: A. A. a woman, aged 56 at the time of her admission to the State Hospital in May, 1911; she had a negative family history and uneventful personal history, except an attack of scarlet fever with good recovery at the age of 8. She graduated second in her class and was considered a good student.

Menstruation established at 14, she had violent headaches which lasted 2 or 3 months, and also had headaches when at a private school. She worked at sewing for awhile and. after graduating, she taught school for 3 years. At the end of this period she broke off a friendship with a man in whom she was interested. This sudden change in attitude was a peculiarity of the patient's in her relation with other men.

Soon after this her first attack developed. It was preceded by headaches and some stomach trouble. It was apparently an attack of hypomania and lasted from October, 1896, to January, 1897. She resumed teaching, and in 1900 she entered a training school for nurses, graduating in 1903. The following year she was operated on for appendicitis.

Her second attack occurred in August, 1904, and she had her recurrent headaches and was not well. The only psychogenic factor given as the probable cause was that her supplies in the hospital were cut down and she was very much

annoyed. She was confused and depressed, and the psychosis lasted one month, after which time she returned to nursing and was successful until the third attack in August, 1908, at which time she had some difficulty with another nurse on a case, and following a near drowning accident she developed severe headaches and gastrointestinal disturbances, which were more severe during this attack and persisted throughout.

She had marked physical disturbances during this attack and was in a mixed manic depressive state. She recovered, and in December, 1908. she resumed nursing. The probable etiological facto: given was that the patient claimed that the family of the patient whom she was nursing had accused her of making love to him, but here again the profound physical condition is in evidence. The fourth attack occurred in November, 1909, after a good summer, but in the fall she was very irritable and faultfinding.

Again there were headaches and stomach disturbances, and she would improve, but only for a short time. She was manic at first, but soon became depressed and stuporous and did not resume her work until October, 1910. On 7th November she again became tired, restless, and soon stuporous, and in this condition was sent to Bloomingdale. A very exhaustive study was made of her case and the history obtained.

The personal traits d& not show any abnormalities except frequent headaches, sometimes with exciting causes, and at other times not. She remained at Bloomingdale from November 15, 1910, until May 9, 1911, and during that time showed varied symptoms—stupor, manic excitement, and depression—and the diagnosis was "Allied to manic depressive insanity." She had rather long periods of delirium and made frequent attempts at suicide.

Examination: She was admitted to the New Jersey State Hospital at Trenton, May 9, 1911. At the time of her admission it was extremely difficult to make an examination, because she would answer only a few of the questions asked and usually in a low, sad tone, and in a careless and indifferent manner. Spontaneous speech was limited to a few disconnected sentences.

She had a sad, dreamy expression, but appeared to observe what went on about her. She would not eat and had to be spoonfed. Stream of thought could not be obtained. She was depressed, retarded and at times agitated and apprehensive. Disoriented as to time and place, but oriented for persons. Her attention was difficult to obtain.

Memory for the immediate past was not good and retention was defective, as she remembered only the physician's name and nothing else that was told her. She read well, but without grasp.

Course: Her condition changed but little in the next 5 years. She continued to have vomiting spells and severe headaches, at irregular intervals, and it was noted that she was suicidal.

She spent most of the time sitting in the ward with her head bowed, hands folded, absolutely unoccupied. She was habitually constipated and had to have an enema every few days.

For months she would lie in bed flat on her back, indifferent to her surroundings. She had to be fed by spoon, as she refused food for most of this period. Occasionally she would utter impulsively a few expressions of profanity and, at times, would attack her nurses when they attended her.

Her condition varied and, at times, she would eat spontaneously, but she seemed to be in the apathetic and impulsive condition so frequently seen in the terminal stages of dementia praecox, (and no one had any idea that she would ever recover.

Treatment: In June, 1916, the resident dentist, in going over all the ward cases, examined her teeth. At first she was so resistive that nothing could be done with her. Later she allowed him to examine her teeth and extract an upper molar, which presented a bad abscess.

From that time her improvement was remarkable and steady. She dates the beginning of her recovery at this time, and on October 21, 1916, 5 years and 5 months after admission, she was discharged as recovered and has remained normal since that time.

Subsequent History: She was visited by the fieldworker in April, 1918, at her home and was very cordial in her manner and very willing to talk over her case.

She stated that she has no memory for her stay at this hospital, and no idea of the flight of time. She recalled one incident about a year and a half before she left the hospital, when she heard a nurse say that she, the patient, was 40 years old.

She resented this and said she was only 36 (her age on admission).

The next thing she remembered was in June, 1916, and this was after she had had the tooth extracted. She was out walking and picked up a paper with "lunatic asylum" on it and asked the nurse where she was and if she was in such an institution, and was told that this was an insane hospital. From that period she recalls that she became interested in things and was especially interested in the flight of time and could not understand that so many years had passed of which she knew nothing.

She has remained normal and has taken an interest in her friends, works at the Red Cross, visits, and her aunt states that, aside from a tendency to be sensitive, she sees nothing wrong with her. She has had several severe mental shocks. Through all these times she has exhibited a normal reaction in spite of the severe mental shock these events have been to her. It has not been necessary for her to work and, in view of the fact of her sickness, her aunt has watched her and kept her from overdoing.

She had very severe headaches after leaving the hospital every month after her periods, and stomach upsets as well; but these have become less severe. She attributes her mental breakdown to overwork and her physical condition and does not believe that there was any other cause.

Comment: This case is cited for several reasons. The recurring headaches and gastrointestinal upsets are present previous to or during each attack, and in my opinion are of as much importance as the other factors given as the cause.

The reason for her recovery is also of interest. She had no mental treatment; in fact, her environment was the worst possible for any good psychic effect; but in spite of this fact she did recover after her teeth were cleaned up and an infected molar removed.

Are we to consider any mental readjustments as possible under the circumstances; or would it he entirely without the realms of possibility to consider that she had some serious intestinal infection coming from an alveolar abscess or other infection, to which she finally established an immunity after the source of the infection was removed, and the toxic effects were gradually lost?

The theory that her psychosis was toxic in origin is certainly substantiated in the history and the rapid recovery after 7 years. The diagnosis is not clear, for although there were periodical attacks which resembled manic depressive attacks, the last psychosis, by reason of the nature of the psychosis and its chronicity, certainly could be classified in the deterioration group.

But the diagnosis is not the essential factor in this case, as we observe many cases of a similar character, that is, with early periodical attacks, but with a tendency toward chronicity. This phenomenon is also observed in many of the chronic infections, such as arthritis, infectious heart lesions, etc., in which after repeated attacks, usually becoming more severe, the patient finally succumbs.

The Aetiological Factors in the Psychoses

From a study of the cases reported here, which are only several among many similar types observed in the last three years, we are convinced that chronic or focal infections, with the resulting toxaemia, play a very important role in the aetiology of the psychoses. These particular cases are reported because they were our earlier cases and are of historical interest in the development of our work.

Even with the crude methods used at first and the incomplete examination, especially the bacteriological work, certain factors stand out prominently and the results of a proper recognition of these factors has thrown some light on treatment as well as on the cause of death in some of the more obscure psychoses.

While we emphasize the importance of the infectious nature of these psychoses we do not exclude other factors, especially the psychogenic factors, in producing psychoses. But we are of the opinion that the latter factors have been given an undue prominence, to the extent that the physical symptoms of most of the mental diseases have been sadly neglected.

We are convinced that heredity and endowment are of the utmost importance as a determining factor in the etiology, when they exist. But in many of our cases these factors do not exist, and therefore they must be eliminated in a certain number of cases. Hence we are inclined to place heredity and constitution in a minor role, as determining the individual's reaction to certain toxins, but not determining the psychoses without these extrinsic factors.

By accepting this view of the problem we can harmonize the various factors that at present seem so antagonistic to many. We find no difficulty in giving

psychogenic factors their proper etiological role when they exist.

However, we do not believe that they are essential for the production of the psychosis in all cases. When they exist in the same individual with the infectious conditions the psychogenic factors have a very profound effect. We can best understand the mechanism by which the psychosis is brought forth when we consider both of these factors playing an important role. We have been inclined to consider that such mental factors as grief, worry, fright, conjugal disharmony, friction, overwork, and mental strain, materially affect the whole physical being of the individual.

Loss of appetite, disturbances of digestion, loss of sleep due to continued worry materially lower the vitality, cause loss of weight, and change the various internal secretions and also lower the immunity of the individual. It is not unreasonable to, suppose that under these circumstances any latent infection, of the type we are considering, would soon become more active and finally virulent. We see so many evidences of these factors that we are inclined to think that this view of the mechanism of the various etiological factors is the correct one.

The varidus mental factors we have mentioned are as potent in other conditions as they are m the psychoses, for example, in tuberculosis.

Therefore those treating tuberculous patients insist on a quiet routine, free from all disturbing mental factors, if arrest of the disease process is to be successful. That infection is present in many psychoses cannot be denied, and any one who makes a special effort will be rewarded. Just how prevalent these infections are will be discussed in another paper, but we believe that they are far more prevalent than one would expect.

Conclusions

We could present many more cases that would substantiate our contention in regard to the importance of focal infection, but these examples will have to suffice for the present. From a study of these cases we are justified in concluding as follows:

1. That chronic, masked, or focal infections play a very important role in the etiology of the psychoses.

2. That the origin of most chronic streptococcus infections is in blind alveolar, or apical abscesses.

3. That the organisms concerned in this infection, spread from the teeth to other regions, notably the tonsils, stomach, duodenum and lower intestinal tract, and that these infections may therefore persist after the teeth have been extracted.

4. That the organisms concerned in focal infection in our cases belong to the slow growing, nonpus producing type, which are, however, extremely toxic.

5. That the short chain or nonhemolytic streptococcus group (the Connellan-King diplococcus), the Staphylococcus aureus, and virulent colon bacillus are the bacteria that are most common in this type of infection.

6. That infected teeth are due to a large extent to:

a. Faulty dental work, such as gold crowns, caps and pivot teeth;

b. Habitual neglect of the teeth, and

c. Infection by contact with parents, family, and friends, by kissing, use of common articles and eating utensils.

7. That a thorough search for chronic infections by all the means at our disposal is imperative, and the removal of such infections will clear up certain mental conditions when other means have failed.

8. That prophylaxis in mental diseases should include the education of physicians and the public in regard to the danger and menace to both physical and mental health, of infected teeth and the difficulty in locating such teeth without a complete x ray examination by a man competent to interpret the radiograms when they are taken.

9. That dentists should be brought to realize the damage they are doing daily by faulty dental work.

10. That many psychoses could be prevented and chronic psychoses cured if the principles discussed in this paper were followed.

11. That bacteriological examination should be an essential part of the work in every hospital for the insane.

In concluding, I wish to express my thanks to those who by their timely assistance have made this work possible.

The greater part of the work has fallen on the laboratory assistants who have been especially diligent in the task.

I am especially indebted to my assistant, Dr. W. W. Stevenson, who, as clinical pathologist, has had charge of collecting specimens from the patients and correlating the laboratory and clinical work.

To the members of the staff, I am indebted for valuable assistance in many ways, particularly in relieving me of the many details of hospital management, and thus allowing me to devote time to this study; to Dr. T. W. Hastings for his continued advice and assistance.

To Dr. J. W. Draper, Dr. G. Reese Satterlee, Dr. J. J. King, Dr. F. S. Bird, and Dr. F. W. Bird, I wish to express my thanks for many courtesies and valuable help.

I am indebted to Dr. E. P. Corson-White for her help 2 years ago, who at my suggestion inaugurated the use of the newer laboratory methods in our hospital, and to Dr Adolf Meyer for his valuable help, friendly criticism, and encouragement in bringing this work to a successful conclusion." - Dr Henry Andrew Cotton, MD, Medical Director of the New Jersey State Hospital; Lecturer in Psychopathology, Princeton University in "New York Medical Journal", 8 and 15 March, 1919.

The Relation of Chronic Sepsis to Functional Mental Disorders

"The relation of Chronic Sepsis to Mental Disorders, this idea had its origin in England. As early as 1875, Savage, the English alienist (psychiatric), reported the recovery of cases of mental disorder following the extraction of infected teeth.

The full significance of this report, was not realised at the time, for if it had been recognised, an entirely different history of the care and treatment of mental disorders during the last century would have been written. Among the foremost pioneer investigators in the field of chronic sepsis is William Hunter, whose first paper was published in 1900. This was the first publication on the subject.

There has been no clearer presentation of the importance of the role of Chronic Sepsis in medicine than that written by him in 1910.

> *"The time, has come, when the title of "antiseptic physician" will become equally distinctive of a good doctor; when it will be equally honoured and honourable as that of "antiseptic surgeon", now in the case of the surgeon; when the knowledge and outlook which it implies with regard to the importance of sepsis in medicine will be deemed one of the highest qualifications which a good doctor could possess; when, in short "antiseptic medicine", the fight against sepsis in medicine, will come to have as distinct a meaning and relation to sepsis in medicine as "antiseptic surgery" has in relation to sepsis in surgery; when a knowledge of the principles and practice of "antiseptic medicine" will be deemed as essential and necessary to the physician as a knowledge of the principles and practice of antiseptic surgery is now essential to the surgeon."*

No better text could be adopted for the medical profession at large, and especially the psychiatrists, than this declaration of principles by Hunter.

Now, over ten years after this was written, his prophetic utterances are beginning to be understood. I would also mention the very valuable contribution of Dr Chalmers Watson, who has laboured so long in this field.

The pioneers in the development of the theory of chronic sepsis in the United States met the same fate as that accorded to Hunter.

Upson, as early as 1907, reported on nervous disorders due to the teeth, and especially the relation of dental infection in dementia praecox (schizophrenia).

Among the foremost investigators in the United States should be mentioned Billings, Rosenow, Hastings, King, Draper, Rehfuss, Barker, in the medical field, and Kurt H. Thoma, Grieves, in the field of dentistry. The work of these men paved the way for the application of the principles of chronic sepsis, not only in general medicine, but in the field of mental and nervous disorders as well.

Development of Chronic Sepsis in Mental Disorders

Our work at Trenton may be said to be the logical outcome of the utilisation of the principles outlined by the pioneer investigators. As early as 1905 the writer had the privilege of spending a year in the Royal Psychiatric Clinic at Munich, where, under Alzheimer, he undertook an investigation of the cortex in the so-called functional mental disorders.

The result of this work was the discovery of certain distinct changes in the nerve-cells in this group of disorders.

Alzheimer was convinced (and we could ask for no greater authority in the field of pathological anatomy of the cortex) that these changes were extremely significant.

This work was published in the Journal of Experimental Medicine in 1915, nearly ten years after the original work was done.

The findings have been confirmed by various investigators, but, were not considered of much importance by psychiatrists.

Sir Frederick Mott has also contributed valuable data to the lesions of the cortex in the so-called "functional group." The effect of finding these lesions in the cortex was to change the attitude of the writer towards the prevailing psychiatric conceptions, i.e., that the functional mental disorders were primarily diseases of the mind and not of the brain, in other words, that an abnormal mind could exist with perfectly normal brain tissue.

Without going into a long discussion on this subject, we would say from a biological standpoint such a condition is impossible. We cannot have function without structure, and consequently we cannot have abnormal function without abnormal structure.

The writer is firmly convinced that even if we did not have the evidence of cortical lesions in the "functional" psychoses, we would have to assume their existence if we accept modern biological teachings. From the standpoint of an organic rather than a functional viewpoint. In this work he stood somewhat isolated, as his views were contrary to all psychiatric teaching at that time.

The important work of W. Ford Robertson, Pathologist to the Scottish Asylums, in his remarkable book.

Therapeutic Immunisation, 1921, shows the result of painstaking bacteriological work for a number of years, and this should be used as a guide for all further bacteriological work, especially that concerned with mental disorders.

In 1916, through the work of Hastings, who had investigated the relation of infected teeth to arthritis, we became interested in chronic sepsis as a possible causative factor in these psychoses.

As a result of our decision we started to literally "clean up" our patients of all foci of chronic sepsis. As a result of this work we were able to increase our recoveries in this group from 37% to 85% the first year.

During the year 1918 our work developed far beyond the infected teeth and tonsils. Through the work of Rehfuss we were able to demonstrate the presence of

gastric infection, and our vaccine therapy was a direct outcome of this work.

The pioneer work of Draper on the pathology of the gastro-intestinal tract assumed considerable importance in the treatment of a certain percentage of our cases which had distinct colon lesions.

The study of the genito-urinary system in the females was materially aided by the work of Arnold Sturmdorf, and his methods, as applied by Langstroth, helped us to a better appreciation of the role of the infected cervix in producing toxic phenomena. The genitourinary tract in the male was studied with the help of Frederick Smith.

In this field the seminal vesicles were found to be affected in a certain proportion of cases, and the enucleation of the vesicles was found to be necessary.

We do claim that we have shown conclusively that we are dealing fundamentally with a disease of the brain tissue rather than a disturbed mind; that we have directed the attention of psychiatrists to the physical side of the problem, a field which has previously been much neglected; that we have produced clinical, pathological and bacteriological evidence of the soundness of our methods.

Methods of Examination

The Blood: Recently, Toren has been able to differentiate a certain type of cell which, according to him, is characteristic of oral sepsis. By making differential blood-counts in suspected cases, he concludes that the noteworthy features of the blood pictures in oral sepsis are, a mild secondary anaemia, a leucocyte count many times an actual leucopaenia, a relative lymphocytosis in which the large lymphocytes present the greater increase, the presence of Turck irritation forms, and last, but most important of all, the peculiar character of large lymphocytes.

He describes this cell as a large lymphocyte the outline of which is usually irregular in contour, the cytoplasm of which has not the robin's-egg blue of the normal large lymphocyte, but which has instead a peculiar greyish, grainy appearance.

The nucleus is always irregular in contour, and stained with a moderate degree of density. The nucleus is frequently cuboid, or ovoid with one flattened side.

The irregularity in the shape of the nucleus does not correspond with the irregularity in the shape of the cytoplasm, in other words, it is not due to pressure of the adjacent cells.

Gastric infection or septic gastritis: The principal type of infection was found to be streptococci of various strains. Occasionally staphylococcus was found (19 cases).

In the more chronic cases colon bacilli were found (13 out of 106); in 8 of these cases the hydrochloric acid was very low, and in 3 it was entirely absent.

The colon bacilli were more often found than the staphylococcus.

It cannot be doubted that the stomach is the seat of serious lesions in the psychotic patient.

Distinct changes in the stomach have been noted by those who have performed autopsies on these patients. The wall is unusually thin, shows a lack of tone and the absence of rugae. Microscopic studies show disturbances in the mucosa, and we have shown the presence of bacteria in the submucosa.

These pathological findings, coupled with the clinical examinations, have established our contention that the stomach is the seat of secondary foci of infection.

This has also been described by Hunter as septic gastritis.

Lesions of the lower intestinal tract: The important work of Sir W. Arbuthnot Lane has a direct bearing upon the lesions of the colon found in the psychotic patient. 20% of the "functional" group present serious lesions of the colon.

Colon Lesions are Detected by 3 methods:

1. The history of intestinal disturbances. Usually there is a history of long-standing habitual constipation, of frequent bilious attacks, sick headaches and vomiting. Frequently attacks of chronic appendicitis are recorded, and often an operation to relieve this condition has already been performed.

2. A careful physical examination will exhibit pain and tenderness in the right lower quadrant, and a certain amount of muscular rigidity over one side or the other. Frequently the colon is full, and enemas and cathartics fail to empty it.

3. The X-ray studies will demonstrate conclusively the presence of marked delay in the test-meal. This may vary from 48 hours in the milder cases to 8 days in the more severe types. If there is marked delay in the caecum, i.e., over 48 hours, then one should be suspicious of a lesion in the colon. A marked residue of the meal in the stomach after 6 hours indicates trouble; whether in the stomach or lower intestine.

Frequently there is a re-duplicating of the sigmoid, so that in some cases 36 inches of excessive sigmoid has been found. This is probably a congenital lesion, and predisposes to stasis and infection.

Fortunately colon lesions occur only in 20%, of our cases. They are found occasionally in acute psychoses, but more often in the chronic types, being specially frequent in the recurrent types of manic-depressive insanity, whether manic or depressed.

Another very important finding is the involvement of the mesenteric lymph-nodes.

These glands are enlarged, congested, and when cultured, streptococci and colon bacilli are frequently found, either alone or in combination.

This is evidence of lesions of the mucosa of the infected wall which allows the passage of the bacteria through the wall into the lymphatic system.

The lesions of the colon vary from mild ulcerations to complete destruction of the rugae and mucous lining, often throughout the whole length of the colon. In the female patients the colon is involved twice as often as in the male cases.

Genito-urinary tract: The gynaecological complication in the females is also very important. The cervix is infected in about 80% of the cases. While this condition is more frequent in child-bearing women, it is not limited to them, and is often found in virgins. Examination of the cervix reveals a muco-purulent discharge, and an eroded and infected cervix.

Colon bacilli and streptococci are isolated from the cervix.

The good results obtained from enucleating the cervix, have convinced us of the importance of this lesion.

In the male patients infection of the seminal vesicles occurs occasionally in the acute psychosis, but more frequently in the chronic types, and the infecting organisms are the streptococci and colon bacilli. Gonorrhoea has not been found to play any role in these infections in either male or female.

Sinus: The sinuses should also be carefully examined, especially the antrum, and treated if found infected. We have seldom found the sinuses involved, especially after eliminating infection of the teeth and tonsils. But the antrum may be involved, and, if not treated, may prevent recovery of the patient.

In discussing the secondary foci of sepsis, we must not lose sight of the oral sepsis, not only as the most important foci, but as the origin of all other foci. We agree thoroughly with Hunter that it is useless to try and relieve a patient by attacking the secondary foci and allowing the oral sepsis to remain.

Treatment by Detoxication

It should be evident, from what has been said, that all surgical measures utilised by us are primarily for the elimination of chronic sepsis in the various tissues. In the majority of cases disturbances of the ductless glands apparently disappear when chronic sepsis has been eliminated.

It is very essential to build up the physical condition of the patient, even after all sources of chronic sepsis have been eliminated.

In some cases the removal of infection alone produces the desired improvement of the physical condition and a recovery of the mental state. In other cases, in spite of the removal of infection, the patient remains thin, emaciated, does not put on weight by forced feeding, and constantly does not recover mentally.

Every effort should be made to increase the patient's weight, and to restore normal metabolism.

Treatment of colon lesions: The investigation and treatment of the colon lesion is the last step in the elimination of chronic sepsis.

When the patient shows no sign of improvement following the treatment that is outlined above, especially if the mental disease is of short duration, the colon then becomes the organ to be eliminated.

From the clinical and pathological evidence are we justified in considering that

the so-called "functional group" is in reality organic, in the sense that the brain tissue is affected by the toxaemia due to chronic infection." - Dr Henry A. Cotton, MD, Medical Director, State Hospital, Trenton, New Jersey, USA, Lecturer in Psycho-Pathology, Princeton University, in "The Journal of Mental Science", 1923.

The Relation of Chronic Sepsis to So-called Functional Mental Disorder

"There is no want of evidence that organic morbid poisons bred in the organism or in the blood itself may act in the most baneful manner upon the supreme nervous centres. The earliest and mildest mental effect by which a perverted state of blood declares itself is not in the production of positive delusion or incoherence of thought, but in a modification of mental tone.

The further effect is to engender a chronic delusion of some kind.

A third effect of its more acute action is to produce more or less active delirium and general incoherence of thought". - Henry Maudsley in "The Physiology and Pathology of the Mind", 1867.

"Of all forms of chronic septic conditions of tissues the surgeon meets those affecting the hard tissues are most difficult to treat, and I propose to confine my observations to septic processes in these tissues, and to examine their relationship to a disturbance of emotional tone.

Chronic septic processes involving the hard tissues set up 2 types of reaction therein:

1. Rarefaction in the immediate vicinity
2. Condensation or sclerosis at the periphery of the infective centre

The disease of bone which has proved interesting is that affecting the jaws.

The ear and nasal passages are also important areas where bony septic processes occur there; these may be caused by, or intensified by, similar conditions affecting the jaws. (Proc. Roy. Soc. Med., xvi, No. 8, discussion, Odontological Section)

In the jaws many tissues become involved in a reaction to infection which, in its chronic form, is essentially ulcerative. The bone, however, is different to bone in any other location on account of its permeation by blood-vessels, nerves and lymphatics connected with the teeth.

The lymphatics are important, in that they may be concerned in general dissemination of infection as well as in relation to erysipelatoid facial phenomena sometimes seen. The importance of the 5th nerve in this connection, lymphatic drainage and reflex phenomena.

Infection of the jaws arising from the teeth may reach the bone in one of 2 ways:

1. From the gingival trough of the gum margin through the lymphatics.
2. So to the periodontal membrane, or through the pulp canal.

It has been estimated (Crow, D. A., "Pyorrhoea Alveolaris", quoted in Dental Surgery and Pathology by J. F. Colyer, 1923) that if all the teeth are affected by advanced periodontal disease, the surface area absorbing poison is just over 20 square inches. Such an extreme condition is seldom seen, but it is not uncommon for a third of the surface area of the teeth to be involved in the disease. In many cases of periodontal disease there is infection of the bone far beyond the immediate vicinity of the roots of the teeth, so that a cubical rather than a superficial area is infected.

T. B. Hartzell (Medical World, 4 December 1913, p. 688, quoted in Dental Surgery and Pathology by J. F. Colyer, 1923) considers that the lymphatic drainage of the tissues contiguous to the teeth is the most perfect in the body, and he states that the very method of attachment of the tooth in its socket increases the danger of general infection.

> *"The elastic nature of the periodontal membrane makes it possible for the teeth to bear the shock of mastication, but the same elasticity favours the transmission of infection. If there is infectious material around the tooth the strain of mastication forces the tooth downwards so that the root acts as a plunger, injecting the septic matter into the surrounding tissue."*

A few cases of emotional disturbance, radiograms of whose jaws show bone necrosis, etc.

The first group are cases occurring in general practice.

They illustrate the presence of disturbed emotional tone associated with bodily symptoms; they represent one end of the scale of toxaemic reactions.

The bodily symptoms are perhaps the more obvious.

The second group comprises cases who, having had dental extraction for bodily symptoms, subsequently developed mental symptoms necessitating certification.

At the other end of the scale is a group of certified cases showing bodily toxaemic reactions of a similar character to those shown in the other groups.

In each of the 3 groups we should probably find some of the same organisms present; possibly different varieties may be responsible for different symptom reactions, but we cannot ignore the quality of the soil, although the seed may be similar.

Long-continued infection with these organisms produces a varying degree of emotional reaction, depending on, possibly, the "endocrine-immunity capacity" of the individual. Let us therefore regard these organisms as important factors of environment operating on the emotional mechanism.

I Group

The first group—bodily symptoms preponderating in the clinical picture:

Case 1 — J. M. B, age 42, male. Under treatment for neuritis for years; severe headaches for several months. Ordinary physical examination negative; colour good, no loss of weight. Very depressed ; pessimistic outlook on life; threatened to commit suicide. Dentist said teeth were sound but pocketed.

Radiogram taken; dark shadow round first right lower incisor and replacement by granulation-tissue of interdental papilla, (Pyorrhoea frequently commences in this location in the lower jaw, the mandibular symphysial junction). The tooth was removed, and except for a slight attack of lumbago a few weeks after extraction recovery was complete, depression and headaches lost. Is now fit and at full work.

Case 2. — O. S., age 50, director. Since age of 35 has suffered from neurasthenia, indefinite malaise, lethargy, indigestion, feeling of unfitness for work, depression.

Condition had become alarmingly worse by October, 1922, when a physical examination was negative apart from a greyish-yellow colour and a furred tongue.

Dentist could find nothing wrong with the teeth.

Radiogram taken; shows much condensation around roots of crowned molar, whose long root can vaguely be seen above the line representing the floor of the antrum. Tooth removed; root found diseased and protruding into infected antrum. Antrum drained.

Immediately after extraction tongue became foul and patient felt very depressed. After a month a slight improvement in general condition; antrum gradually healed. General improvement thereafter steady. Patient has now a healthy bronzed colour, a clean tongue, he feels very fit and energetic. Can do a hard day's work with normal fatigue.

Case 3. — T. H., director. About age of 50 developed general malaise, loss of weight, indigestion, insomnia, high blood-pressure, pains in the head, unstable emotional state, very depressed, ideas of unworthiness; was sure his business was going to pieces. His family had to keep him under constant observation. Seen by three doctors. The 3rd recommended dental extraction gradually performed. Under recuperative treatment for 3 years, including a world tour. A constantly recurring pain at the back of one eyeball resulted in a radiogram being taken in Canada. This showed more infected teeth and an unerupted canine. These were removed, and following the removal of the unerupted eye tooth the eyeball pain disappeared. He is now in charge of his business and enjoys life in a typical north country way. Radiograms show large periapical granuloma around root of screw-crowned tooth; unerupted canine, an inch long, well embedded in bone, which in one part shows some rarefaction. The next film shows considerable areas of rarefaction around 2 teeth. The next film shows a small periapical infective change around one tooth.

Case 4. — The patient, a doctor, from the age of 16 to 25 years had several teeth decay and had had them stopped since, when he dates the development of periods of very definite depression and alimentary disturbances, included amongst which was what he described as "a peculiar feeling of emptiness in the epigastrium which was truly awful" : the epigastric sensation. About a year ago, when age 39, he noted his heart began to drop beats; the condition became worse and he had to take digitalis. In January of this year teeth were radiographed and a small periapical shadow was seen. (The size of a periapical granuloma is no criterion of its danger). The tooth and gum on the surface appeared healthy. Tooth was removed. He has since improved in all his symptoms, and has not experienced any acute depression as formerly.

Case 5.—D. W., age 28, female. Bad cardiac "heredity", including a brother unexpectedly found dead in bed. Long history of alimentary disturbance regarded as appendicular, loss of weight; later pulse became intermittent, marked depression present. Radiographed: 6 periapical granulomata found.

Following extraction of affected teeth tongue became very coated and there was no improvement apparent for several weeks: in fact she was somewhat worse.

Now in robust health and depression has cleared up.

Formerly a chronic invalid.

I have submitted these cases to illustrate:

1. A few of the various symptoms which may be met with associate with Chronic Septic conditions of the jaws in supposedly sane persons.
2. The exacerbation for a variable period of the Bodily and Emotional Symptoms following surgical interference. This exacerbation may be variable in intensity and the system showing the reaction.
3. The subsequent improvement following Removal of Septic Teeth may not be immediately obvious even after an exacerbation has passed off.

Sir Frank Colyer has informed me that in his experience a year may elapse before a definite improvement can be recorded in bodily diseases. With this improvement can generally be noted a gain in weight.

II Group

The next group are persons whose emotional tone was probably disturbed in association with bodily symptoms, for which latter cause surgical treatment became necessary, and who, following that treatment, showed an intensity of emotional disturbance necessitating certification. I link this group with the exacerbation group.

Case 6. — A woman, age 40, had had all her teeth extracted under local anaesthesia for advanced pyorrhoea. On admission, first attack, she was wildly delirious and emaciated; the pulse was weak, thready, extremely intermittent; extremities cold and showed gravitational cyanosis.

Coincidently with the improvement of the septic mouth, the healing of which was very delayed, her circulatory condition improved and she became stuporose.

Later her temperature rose, she was putting up a fight, with the symptoms of an influenzal "cold."

During this pyrexia she began to talk. She then rapidly improved, gained weight, and was discharged.

I regard the influenzal cold as the reaction ensuing on the destruction and possibly excretion of the organisms remaining in the healed tissues, carried off by leucocytes, through the mucosae of the airpassages. I gathered that a local anaesthetic was employed, but I do not think the symptoms can be attributed solely to its use.

Case 7. — A man, age 42, first attack, was admitted with gums not healed following dental extraction, apart from which he showed no sign of gross bodily disease. His emotional tone appears to have become obviously disturbed during the week following extraction. He developed fear delusions, passing on to excitement and confusion.

In 3 months he was well. A local ansesthetic had been employed.

Case 8. — Male, age 32, first attack, had been noted by his landlady to have been "going silly for a fortnight" before certification was rendered necessary by a suicidal attempt, the development of delusions and violence. Three months before he had had a dental clearance for extreme oral sepsis, on medical advice, because he "could not keep his food down."

Following this he became forgetful and gradually became worse as described.

On admission the predominant features were auditory hallucinations and a delusion of hypnotism. Bilateral pulmonary fibrosis was present. Weight, 7 st. 12 lb.; height, 5 ft. 1 in. The anaesthetic employed was nitrous oxide.

Case 9. — A male consulted a doctor for various indefinite symptoms of a bodily character, pains in the head, etc., who ordered two upper molars to be extracted. Nine days afterwards he was certified as having various delusional ideas and associated conduct.

III Group

I now submit a few certified cases to illustrate the association of bodily changes with emotional disturbance and bone infection.

Case 10. —Mrs. C., age 40, on emerging from a period of wild confusion developed cuticular whitlows of both forefingers and later a boil on a buttock.

Pulse was noted to be irregularly intermittent, dropping as many as 5 or 6 beats consecutively; colour pale, with fleeting blushes. She was still emotionally unstable. Gums oozing thin pus. Pulse gave no response to digitalis. Teeth radiographed. Bone around the remaining teeth showed early rarefactive changes with thickening of the periodontal membrane.

On removal of these the pulse immediately improved and coincidentally her emotional state. She was discharged. Two months after dental extraction the pulse dropped only a very occasional beat.

The radiographic extent of the damage is not a guide to the virulence of the infection.

Case 11. — A girl when 16 had an attack of stupor lasting for several months. At the age of 18 developed delusions of poisoning and emotional instability, culminating in an attack of wild excitement, hallucinated, displayed crucifixion attitude, grimacing, destructive, wet and dirty. Medicinal treatment produced no satisfactory result. Extraction of some carious teeth and infected stumps was carried out. For a few days following extraction she was worse mentally.

Later the catamenia (menstruation) returned, having been in abeyance for several months. She then made a rapid mental and physical improvement, and within 2 months gained 2 st. on her admission weight.

This case illustrated very well the exacerbation phenomena.

Case 12. — W. H. G., age 59, male, first attack, auditory hallucinations, grandiose delusions, suspicious his food was being doped (it was), impulsive, noisy, blood Wassermann negative. Had lost all his teeth except those shown in radiogram, which shows extensive bony changes. Gums not purulent.

Case 13. — H. W., a chronic case of delusional psychosis; general bodily health good. Radiogram shows two well-marked periapical shadows and other chronic bony changes.

Often radiograms will show buried stumps, roots, etc. I have met with many cases in which dentures have been fitted over stumps, and in the mucosa around signs of streptococcal infection are manifest.

The varieties of reflex irritation from septic teeth

I would like to submit a photograph showing elevation of the shoulder during a period of noisy excitement in a boy, age 16, who has some septic roots and a very carious tooth on the same side lower jaw as the shoulder elevation. During the

periods of excitement facial pallor was marked. From the material I have submitted I wish to emphasise a few points. The presence of toxemic symptoms indicates the necessity of a thorough examination. The teeth and gums may superficially appear normal.

As Sir Frank Colyer points out, the absence of objective symptoms is no proof that damage, and possibly irreparable damage, is not in progress (Medical World, 4 December 1913, p. 688, quoted in Dental Surgery and Pathology by J. F. Colyer, 1923). The local inactivity of a septic focus is no criterion of its clinical import and danger.

Dr. Watson Williams states that patients whose septic gingivitis is most purulent, and whose pockets of pus are numerous, often suffer less in general health than do a large group in whom the pyorrhoea is latent (Proc. Roy. Soc. Med., June 1923, Section of Odontology). Infection may exist deeply in the jaws. Simple removal of an infected tooth may not be enough.

Dr. Stanley Colyer (Dental Surgery and Pathology, 1923) has shown that the bone may be deeply infected. He obtained a pure culture of Staphylococcus aureus from the bone of the edentulous jaws of a man, age 24, about 5 months after the extraction of his teeth. The patient had been exceedingly ill, and no cause could be found for his condition. It is in connection with this deep infection of bone, which radiograms show may be extensive, that interest centres, as well as in degenerative changes set up in other tissues by long-continued infection.

> *"Latent infection, is essentially a question of the incarceration of organisms in cells or among cells. The factors which set free the imprisoned organisms and bring about the recrudescent infection are such influences as interfere with the vitality of, or disturb the arrangement of the cells which form the enclosing barrier.* ***These influences may be trauma, chemical or thermal,*** *but there is also reason to believe they may be of a more general character, such as all conditions which depress the health and vitality of the body as a whole." - C. J. Bond, in "British Medical Journal", 10 December 1921.*

This point is of interest in considering the possible recurrences of general symptoms following local treatment. The migration of leucocytes carrying undigested organisms is also dealt with in this lecture.

The relation of this migration to the development of purulent reactions is suggestive in considering Osteodental Sepsis.

H. Waller has shown that in the case of mothers nursing their infants, the children failing to gain in weight, and even vomiting their feeds, there was evidence that the trouble was attributable to the septic condition of the mouth of the mother, for, with the removal of the septic teeth, the children rapidly gained in weight. (Lancet, 4 November 1916)

I have seen an oral septic maniacal case who, having developed several cuticular pus reactions associated with intervals of quiescence, proceeded to develop during two consecutive periods of quiescence an abscess in each breast.

The pus contained streptococci and staphylococci.

After evacuation each soon healed, and was quite a different type of abscess to what one meets with in general work.

If this migration and excretion affects the mammary gland and the skin, one may reasonably expect similar processes to affect other systems where diseases, as described by Sir William Wilcox, are set up.

I conclude that clinically an important relationship can be demonstrated to exist between prolonged emotional disturbance and chronic septic processes occurring in hard tissues, especially in connection with the jaws.

The emotional disturbances are toxaemic reactions, the quality and intensity of which will depend on the "endocrine-immunity capacity" of the individual.

Mental disorders are constants, the product of several variables, some of which are dependent variables." - Dr T. C. Graves, MD, FRCS, Medical Superintendent, Rubery Hill Mental Hospital, Birmingham in "The Journal of Mental Science", 1923.

The Brain Microbiome
The Bacteria in our Brains

"**The Gut-Brain Microbiome** has received an abundance of attention recently.

It is thought that gut microbiota can influence brain function and behaviour, but how that happens is still unknown.

It has been proposed that bacteria can enter the brain through the blood brain barrier, and/or via nerves that innervate the gut.

Here we show the presence of bacteria in the human and mouse brain under noninfectious or nontraumatic conditions.

We first found the bacteria, identified by morphological criteria, in ultrastructural samples of human postmortem brain (n=34 cases).

We did serial section analysis for identification and quantification.

The density of the bacteria varied according to the brain region, with abundant bacteria in the substantia nigra, hippocampus and prefrontal cortex but sparse numbers in the striatum.

Bacteria were present in intracellular locations, predominantly in astrocytic end feet at the blood brain barrier, dendrites and the soma of glial cells.

They were also abundant adjacent to and within myelinated axons.

We examined mouse brains that were fixed immediately at death (n=10); **there were abundant bacteria in similar intracellular locations.**

To eliminate the possibility that the presence of bacteria was due to contamination, we examined germ free mouse brains (n=4) processed in an identical way; we did not detect any bacteria." - R. C. Roberts, C. B. Farmer, C.K. Walke, Psychiatry and Behavioral Neurobiology, University of Alabama, Birmingham, 6 November 2018.

Chapter 58

Researches Upon the Aetiology of Idiopathic Epilepsy

"It is the aim of this paper to present the results of a research upon Epilepsy.

This research was originally undertaken with a view to studying **the relation of uric-acid excretion to the epileptic paroxysm,** a line of inquiry brought to our notice by the recent publications of an English writer, Haig (Uric Acid us a Factor in the Causation of Disease, 1892).

According to this author, the grand mat seizure is determined by an excessive accumulation of uric acid in the blood. In the study of this question our results were not confirmatory of the view of Haig.

Certain observations, however, of another kind, suggested to us the possibility of a causal relationship in some cases between putrefactive processes in the intestine and epileptic seizures.

As a consequence we were led to undertake the research that is here recorded and with which the greater part of this paper is concerned.

Evidently the planning of a study of this character involves the assumption that the discharge of nerve force from the cortex which constitutes the epileptic seizure may be in some way conditioned by the quality of the blood by which the cerebral elements are nourished.

The idea that epileptic paroxysms may be related to toxic substances in the blood is not a new one, the clinical aspects of epilepsy being such that they have suggested a dependence of this kind to some authors who have not been satisfied with the purely mechanical explanation of the epileptic seizure.

Thus Dr Austin Flint, MD in "Practice of Medicine", 1886 says:

> *"In a large proportion of the cases of epilepsy no sources of centric or of eccentric irritation are apparent. That under these circumstances* ***the epileptic paroxysms are due to the action of an internal and at present unknown toxical agent seems to me the most rational hypothesis. Epilepsy, according to this hypothesis, is a toxaemia analogous to uraemia, the toxical agent being produced at variable intervals, the quantity and the continuance of its production not being sufficient to endanger life; and in this respect the contrast with uraemia being striking. If this pathological view be correct, knowledge of the nature and source of the toxical agent, which may perhaps be acquired, will, as we may hope, render this disease controllable."***

That toxic substances produced in the intestine may sometimes determine the occurrence of epileptic seizures is a possibility that occurs to one on considering the cases of epilepsy in which the symptoms of disordered digestion, often from an error in diet, are associated with an unusual frequency of the seizures.

The observations which we have made upon intestinal putrefactive processes in epileptics are based upon a study of the urine of such cases.

As we shall explain further on at greater length, certain substances in the urine, namely, the ethereal sulphates have been shown to be derived from putrefaction in the intestine, and the extent to which such putrefaction occurs may be inferred, bearing in mind certain precautions, from the quantity of these substances in the urine.

These substances have been studied in 31 cases of epilepsy according to the generally accepted meaning of this term.

In the majority of these cases the uric-acid excretion also has been studied.

The results that have been derived from this inquiry may be presented under the following titles:

First

Synopses of the clinical histories of the cases of epilepsy with the tabulated results obtained from analysis of the urine.

Second

Conclusions relating to the excretion of Uric Acid in Epilepsy.

Third

Conclusions relating to the Occurrence of Intestinal Putrefaction in Epilepsy.

Case I — J. V. S., aged 52; weight, 77kg. First grand mal seizure occurred during night, in patient's 43rd year. Consisted of a general convulsion without aura, biting of tongue, or passage of urine, followed by active delirium and deep sleep.

Grand mal seizures increased gradually in frequency; they now recur 3 or 4 times a month. Two years after first seizure developed petit mal attacks, of which there are several a week. Slight loss of mental power. General health fair.

Has always been **predisposed to diarrhoea** and dyspepsia.

Case II — M. R., female, aged 24; weight, 45.5kg. Has had typical grand mal paroxysms for 4 years, 2 to 3 every month. No known cause. Paroxysms have been diminished in frequency (1 to 2 months) under bromide (potassium bromide) treatment. Seizures usually occur just before, during, or after menstrual period.

General health feeble. Marked anaemia. Intercostal neuralgia.

Frequent attacks of gastric pain after food.

Occasional constipation.

Case III — M. M., aged 26. Grand mal seizures for several years. Developed without known cause. At first had only 3 or 4 seizures a year; now has about 1 a month, usually during or just after menstrual period. Epigastric aura. Bites tongue. Clonic spasm general. Seizure followed by stupor. No appreciable mental impairment. General health good. Digestion usually good. **Seldom constipated.**

Case IV — E. E., aged 26; weight, 73kg. Good health until 2 years ago. At the time was struck upon the right side of the head by the falling of a brick. No loss of consciousness resulted, but a scalp wound was made. About 2 months later had the 1st epileptic seizure. Since that time there have been many seizures, and at the present time there are many seizures weekly. Frequently there are many seizures in succession. The convulsions are general. Much mental impairment. General health good. No constipation or digestive disorder.

Case V — C. C. I., male, aged 16; weight, 61kg. Epileptic convulsions since 3rd year. Early history obscure. Much mental impairment. Seizures 2 to 4 a week; uncontrolled by bromides. No aura. Deviation of eyes to right; clonic spasm more marked on right side. General health excellent. No evidences of indigestion. No constipation.

Case VI — C. T. B., male, aged 34; weight, 68kg. Seizures commenced during early childhood without known cause. Have continued without change in frequency or character. Much mental impairment. Seizures, 5 or 6 a month; uncontrolled by bromides. Typical grand mal seizures. Clonic spasm general. Sensory aura in small proportion of seizures (1 in 10). General health robust.

Case VII — F. G. S., aged 30. First grand mal seizure at age of 10. Now has 2 or 3 seizures a month. Often these are followed by maniacal excitement. General health good. Great mental enfeeblement. Is apt to become constipated. Two months ago became **constipated,** and the grand mal seizures became more frequent and severe during this time than usual. Does not suffer from dyspepsia **(indigestion).**

Case VIII — E. M. B., aged 50. For more than 20 years has had infrequent typical grand mal seizures, which developed without known cause. Considerable mental excitement before and after seizures. Has been free from seizures as long as 3 years. At present has 2 or 3 seizures every 2 weeks. Great mental enfeeblement. General health excellent. Does not suffer from dyspepsia or constipation. Has a uterine fibroid. This began to grow rapidly 5 years ago, and the seizures have been more frequent ever since.

Case IX - P. S., male, aged 63; weight, 73kg. One uncle epileptic. Rugged health until 18 years ago. Then a sudden mental shock was followed by first petit mal seizure. Petit mal seizures increased gradually in frequency from 1 a month to 5 a day in 1888. Then first grand mal seizure. Grand mal seizures of typical character

at night; loss of consciousness, with falling, but without true convulsive movements, during day. Falling seizures about 1 a day. On bromides since first petit mal seizure. Seizures much more frequent when bromides discontinued. Gastric dyspepsia since bromides begun. Transient glycosuria at. times. General health excellent. Very little mental impairment. Bowels regular usually.

Case X — S. S., aged 29; weight, 52kg. First epileptic seizure occurred at age of 18, without known cause. The first seizure coincided with the menstrual period. Since then seizures have been frequent. Several typical grand mal seizures occur at present in the course of a week. Patient has a vague epigastric aura. Always cries out. Has occasional petit mal seizures. Mental condition good. General health good. Bowels regular.

Case XI — E. B., aged 45; weight, 63.5kg. Patient had the 1st grand mal seizure 15 years ago. Came on without known cause. Received a severe burn of the right hand in the first seizure. Has had ever since many grand mal seizures monthly, and usually several petit mal seizures. No relation of the seizures to menstruation. During past year seizures have been somewhat less frequent than formerly. Little or no mental impairment. General health excellent. Neither indigestion nor constipation.

Case XII — K. S., aged 43; weight, 50kg. First seizure at age of 17, without known cause. Now has about 1 seizure a week, and several petit mal seizures daily. No aura. No relation of grand mal to menstrual periods. Much mental impairment. General health fair. Is not dyspeptic.

Case XIII — K. M., aged 24; weight, 73 kg. Has had typical grand mal seizures since her 11th year. These came on without known cause. Seizures were very frequent from the beginning (several a week). At present patient is having from 6 to 12 seizures daily. Often one seizure occurs directly after another. Both clonic and tonic spasm are usually rather more marked upon the right side. Stupor lasts long after seizures. Great mental impairment and continuous dullness. No relation of seizures to menstruation. General nutrition good.

Case XIV. — B. F., aged 19. First grand mal seizure at the age of 10 without known cause. Seizures frequent from the first. Menstruation at 13. Seizures especially frequent about menstrual period. Now has several seizures daily (3 to 5), sometimes as many as twelve. No distinct aura. Patient utters a cry and falls. A short period of general rigidity is followed by clonic spasm, chiefly of left arm. After this, patient grows violent and abusive for a short time. Seizures vary much in severity and duration. Mental power not greatly impaired. General health good. **Chronic constipation.**

Case XV. — K. A., aged 25. First grand mal seizure at age of 13, without known cause. First menstrual period about a month after first seizure. Seizures from 2 to 12 a month; severe and typical grand mal. More frequent at menstrual period; less frequent now than formerly. Considerable mental impairment. General health good. **Usually constipated.**

Case XVI. — S. C., aged 31; weight, 125 pounds. First grand mal seizure at 15, without known cause. Seizures increased gradually in frequency; now has 8 to 10 seizures a month. Seizures are rather more frequent about the menstrual period. General health good, with the exception that patient suffers from dysmenorrhcea. Slight mental failure. Is not troubled with constipation or indigestion.

Case XVII. — K. M., aged 22; weight, 130 pounds. Has had grand mal seizures since her 13th year. Seizures average 1 or 2 a month. They usually occur just before or during a menstrual period. No aura. No petit mal seizures. Mental condition apparently little impaired. General health excellent. Is usually constipated.

Case XVIII. — M. D., aged 35; weight, 130 pounds. First grand mal seizure in 17th year. At one time had 10 to 12 seizures a month; now has about 7 seizures a month. Seizures are a little more frequent at menstrual periods. Has 2 or 3 petit mal seizures a month. General health good. Considerable mental failure. Is not troubled with constipation or indigestion.

Case XIX. — R. M., aged 17. First grand mal seizure at age of 13, without known cause. Seizures have been frequent ever since this time, and now occur from 3 to 5 times a week. Menstruation began at the age of 14, and has always been scanty and irregular. Now suffers from amenorrhoea. Mental condition good. General health good. Does not suffer from indigestion or constipation.

Case XX. — M. J., aged 33; weight, about 140 pounds. First seizure occurred during 11th year without known cause. Since then has had many grand mal seizures monthly until recently. Has had as many as 16 seizures a day; now has 1 or 2 in the month. General health good. Intelligence somewhat impaired. **Is troubled with constipation, but seldom has indigestion.**

Case XXI. — D. K., aged 37; weight, about 130 pounds. At age of 14 had the first grand mal seizure, which came on without known cause. Since that time has been having from 6 to 10 severe grand mal seizures, with prolonged loss of consciousness, in the month. Seizures are rather less frequent now than formerly. They occur with especial frequency at the beginning of the menstrual period.
Is much troubled with constipation. Is not troubled with indigestion.

Case XXI. — A. W., female, aged 37. Grand mal seizures since age of 13. First seizure occurred about time of first menstruation, but referred to fright. 4 or 5

paroxysms monthly, 3 or 4 of them usually within a few days of period. Considerable mental impairment. General health good. No digestive disorders. No constipation. Bromide treatment.

Case XXIII. — F. K., female, aged 34. Seizures commenced at the age of 18 without known cause. Has both grand and petit mal paroxysms, the former especially at the menstrual period. 3 to 4 grand mal seizures a month. 3 to 5 petit mal seizures a week. Grand mal seizures formerly more frequent than now; appear to be partly controlled by bromides. General health good. Does not suffer from indigestion or constipation.

Case XXIV. — A. D., female, aged 39; weight, 189 pounds. Severe typical grand mal seizures began 9 years ago at a time of grief and anxiety. Seizures especially apt to occur at menstrual period; 3 or 4 a month; formerly 1 or 2 a month. **(Constipation and indigestion marked)** Mental state good. General health robust. No bromides for 5 months.

Case XXV. — B., female, aged 31. Grand mal paroxysms began 12 years ago without known cause. 3 or 4 seizures a month; formerly less frequent. Seizures especially apt to occur during the week after menstruation. Mental condition good. General health robust. **Suffers from constipation and indigestion.**

Case XXVI. — M. H., aged 30; weight, 110 pounds. Seizures of typical grand mal coming about 3 years before without known cause. Second seizure about 1 year after 1st; 3rd, about 6 months after 2nd. Now has 1 seizure about every month. Non-menstrual. Aura and cry before seizure. Tonic followed by general clonic convulsions. Mental condition good. General health good. Does not suffer from constipation or indigestion. Severe bromism at one time.

Case XXVII. — Julia Hackett, aged 59; weight, 165 pounds. Severe and typical grand mal seizures since her 9th year. 1st seizure occurred about 2 weeks after a fright received from falling from an apple tree. Slight scalp wound at this time. Has about one seizure a month at present; formerly had several a month. No aura. Onset of seizures very sudden. Period of tonic spasm very short; spasm clonic almost from first. Duration, 2 to 3 minutes. Mental condition apparently unimpaired. General health robust. Bowels regular. No symptoms of dyspepsia.

Case XXVIII. — M. R., aged 24; weight, 110 pounds. Severe grand mal seizures began at age of 5, but early history is obscure. During past 4 years has had from 5 to 10 severe grand mal seizures a month. Especially frequent just before or during menstrual period. No aura; screams and falls suddenly; long period of rigidity (2 minutes) before general clonic spasm comes on. Great mental enfeeblement. General health good. Appetite good. **Frequent constipation.** No dyspeptic symptoms.

Case XXIX. — D. II., aged 27; weight, 103 pounds. When 7 years of age began to have petit mal seizures. Seizures continued for several years, ceased spontaneously, and then recurred. Has from 3 to 10 seizures a week. Usually a painful epigastric aura an appreciable time before the seizure, which consists of temporary loss of consciousness, during which there are automatic movements. After seizure, patient is pugnacious. Seizures diminished in frequency under influence of bromides. Slight mental weakness. General health fair.

Case XXX. — R. K., female, aged 36; weight, 99 pounds. Good health until 12th year. Then first petit mat seizure without apparent cause. Several petit mal seizures daily. Aura of general painful sensation all over her, with accumulation of gas in intestines, arrested by inhaling amyl nitrite. Great increase of attacks on removal of bromides. Seizures most frequent at menstrual period. Rarely grand mal seizure. General health fair; **suffers from constipation.**

Case XXXI. — J. K. S., aged 33; weight, 138 pounds. Was in good health until 2 years ago, when he had a slight petit mal seizure; sudden loss of consciousness, with pallor, while in sitting posture and talking. Duration of first seizure, a few seconds only. Second seizure, 6 months after first and slight. Since then seizures much more frequent and more severe. Loss of consciousness and pallor, followed by temporary mental confusion. 151 seizures in first 3 months of 1892. Mental power considerably impaired. General health good. Bowels regular.

Synopses of the Clinical Histories, Together with the Tabulated Results Obtained from Analyst of the Urine

In selecting the foregoing cases for study an effort was made to include only cases of idiopathic epilepsy. In 3 of the cases (IV, V, and VI) there is, however, reason to believe that the seizures may have been dependent on organic disease.

In 2 of these three cases the seizures date from early childhood; in the other case they date from a severe injury to one side of the head.

Of the 32 cases of epilepsy, grand mal seizures were the distinctive features in 29.

In the 3 remaining cases (XXIX, XXX, and XXXI) there were very frequent petit mal seizures.

In one of these three cases there was no history of the occurrence of any grand mal paroxysms, hut in the two others such paroxysms were said to occur at irregular and usually long intervals.

Eighteen of the 31 patients were inmates of the Hospital for Nervous Diseases, and we are indebted to Dr E. D. Fisher and Dr Frederick Peterson for their courtesy in placing these patients at our disposal for study.

Conclusions Relating to the Excretion of Uric Acid in Epilepsy

Is the epileptic paroxysm associated with any peculiarities in the excretion of uric acid? According to Haig, there is a great diminution in uric-acid excretion before the paroxysm, and an equally considerable increase in the uric acid excreted at the time of the paroxysm.

Looking at those of our figures that relate to the elimination of uric acid before the seizure, we find that the excretion has only in rare instances varied from the limits of health.

This is true both of the cases where the urine just before the paroxysm was examined, and of the instances where on the urine for the 24 hours preceding the day of the seizure was studied.

In studying the relation of uric-acid excretion to the epileptic seizure we have to look both at the results obtained from the estimation of uric acid in the 24 hours urine immediately preceding in that of, and in that immediately following the seizure, and at the results obtained from the estimation of uric acid in divided portions of the urine of the 24 hours in which the paroxysm has occurred.

The latter method is followed in some instances because there is the possibility that abnormalities in separate portions may neutralize one another in the total 24 hours urine and thus escape detection. For instance, the urine before the seizure might contain abnormally little uric acid, and that at the time of or after the seizure a large excess but a mixture of the 2 portions might show no departure from the normal limits.

In a few instances the uric-acid content has been higher than is seen in health, hut this has been in cases where high uric acids were frequent without respect to the time of the seizures.

One of the first things that owe notices in looking over the table is that in nearly every case some of the 24 hours urines show deviations from the normal ratios (1:46 to 1:65). In 16 of the 21 cases where uric acid was studied, the uric acid varies from the limits of health, most of them showing a considerable proportion of urines in which the ratio to urea is distinctly high.

The same case and some of the others show also a deviation of another character. While many of the ratios are such as are met with in health among different individuals, the variations are certainly wider from day to day than those of individuals in health and on a reasonably constant diet

The general statement may safely be made that there is nothing distinctive about the uric-acid content of the urine just before a paroxysm.

The urines passed on the days of paroxysms (total 24 hours) and the urine passed immediately after seizure have also shown nothing distinctive.

The latter are apt to show a higher uric-acid ratio than the urines passed just before seizures; very often, however, the ratio is one that belongs within the limits observed in health.

In general, it may he said that the urine passed after seizure is apt to have a higher uric-acid ratio than the urine before or about the time of the seizure

(including that passes immediately after).

The difficulty in getting the condition in the collection of urine the same in different cases makes numerical comparisons difficult.

Of 15 seizures when a comparison may be made of the uric-acid content of the urines after seizures (either immediately or the day after with the uric-acid content on the day of the seizures, the urines in 9 cases showed an increase in the uric-acid content after the seizures, and in 6 of these cases the uric acid ratio was higher than 1 to 45.

These ratios are as follows: 50, 43, 38, 37, 31, 43, 48, 34 and 51.

The foregoing remarks apply to eases of grand mal.

In petit mat cases we have observed a continuously high uric-acid excretion which appeared to be related in some way to the cause of the seizures.

It was found in 2 out of 3 petit mal cases that when the excretion of uric acid was reduced to normal by the use of a milk diet, the seizures were greatly reduced in frequency.

This effect upon the seizures of reducing the uric-acid excretion has been of considerable duration in these cases and may prove to be permanent.

Conclusions Relating to the Occurrence of Intestinal Putrefaction in Epilepsy

Before we undertake to point out the conclusions to be drawn from a study of the facts relating to intestinal putrefaction in the cases of epilepsy, it is desirable to indicate the nature of the evidence on which these conclusions are based.

Before the use of scientific methods in medicine, digestion was regarded wholly as a putrefactive process. Early observers, however, pointed out the error of this view.

As was shown by recent investigations of Harris and Tooth (Journal of Physiology, ix, p. 220; see also in this connection Strauss and Wurtz (Archives de Med. Experimentale, 1890), normal digestion in the stomach is always free from bacterial action. But in the intestine, while the ferments of the various secretions are giving rise to those changes that are essential for the absorption of food, putrefactive processes always occur and possibly aid in digestion.

The bacteria which are the immediate cause of this putrefaction are introduced with the food and escape the destructive action of the gastric juice.

This intestinal putrefaction is kept within normal limits by certain natural antiseptic conditions. The action of the bile in this direction is well known.

Its power of diminishing putrescence is due chiefly to the fact that by increasing peristalsis it hastens the passage of its contents through the intestine. (Ueber den Einfluss von Magengahrung auf die Faulnissvorgange im Darmkanal. Archiv f. experim. Pathologie u. Pharmakol., Bd. 26, S. 133-138)

The acid of the gastric juice has an antiseptic action on the contents of the small intestine, as has been recently shown by Wasbutzki.

Wasbutzki found that the excretion of ethereal sulphates was increased when the secretion of hydrochloric acid in the stomach was diminished in consequence

of gastric disease, he found further that in cases of hyperacidity of the stomach the excretion of ethereal sulphates was diminished.

This he attributes to the action of lactic and butyric acids. See also in this connection Biernacki (Ueber die Darmfaulniss bei Nierenentzundung und Ieterus nebst Bemerkungen uber die normale Darmfaulniss. Deutsches Archie fur klinische Medicin, Band 49, 1. Heft, 1891).

This author found that in eases of Bright's disease (chronic diffuse nephritis) in which the secretion of hydrochloric acid is diminished there is a corresponding increase of the ethereal sulphates in the urine.

In cases of catarrhal jaundice with complete occlusion of the Bile-duct he found a similar increase in ethereal sulphates, and lie regards this fact as evidence that the bile has an antiseptic action.

The tendency of micro-organisms to produce compounds which, if allowed to accumulate, would ultimately destroy their own life, is of interest in this connection.

Thus we find in the intestine, under perfectly normal conditions, 2 distinct kinds of ferment action by 2 widely different orders of ferments, which give rise to the formation of products of entirely different nature.

On the one hand the unorganized digestive ferments produce changes in the food preparatory to absorption. They form from albumin, aided by the alkaline medium in which they act, successively an albuminate (alkali-albumin), albumoses, and true peptones, which latter may yield in part leucine, tyrosine, asparaginic acid, ammonia, and proteincromogen.

On the other hand, the organized ferments — the bacteria — yield by their action on proteids, or on the products into which the proteids have already been transformed by the digestive action of the unorganized ferments, the following substances or classes of substances: ammonia, sulphureted hydrogen, ammonium sulphide, volatile and fatty acids, amines and amido-acids, especially leucine and tyrosine; indol, skatol, phenol, cresol, phenyl-propionic and phenyl-acetic acids, and the aromatic oxyacids hydroparacumaric acid and parahydroxyphenylacetic acid. (see Haliburton, Text-book of Chemical Physiology and Pathology, 1891, p. 694)

The presence of these numerous acid compounds, especially of lactic acid, gives the contents of the large intestine, as a rule, an acid reaction. Further, intestinal bacteria have a fat-splitting action similar to that of the steapsin of the pancreatic juice, giving rise, however, in addition, to lower acids of the fatty series.

Likewise lecithin is decomposed into glycero-phosphoric acid and the ptomaine choline, which further breaks up into carbonic acid, marsh gas, and ammonia.

Besides this long and varied list there arc doubtless other substances which may result from bacterial activity in the alimentary canal, of which play an important part in the condition of the subject.

It is held by some observers that **the production of poisonous alkaloids in the intestine is a normal process and that these are absorbed, and, if excessive in amount, may lead to Auto-Intoxication.**

There is some evidence that this is the case in certain forms of disease.

That many of the products of intestinal putrefaction are absorbed is well known. They are, however, rapidly excreted by the kidneys, so that the individual generally escapes their poisonous action. In the urine these substances appear in but slightly modified forms, and their amount and nature may reveal the condition in the intestine.

Several methods are available for estimating putrefactive changes from a study of the urine.

Thus Brieger (Zeitschrift f. physiolog. Chemie, Bd. 11, S. 221) estimated the quantity of phenol from the distillate of acid urine.

These products exist in the urine in combination with sulphuric acid as ethereal potassium sulphates.

Thus phenol, cresol, catechol, indol, skatol, etc., which are formed in the intestine appear in the urine as phenolsulphate of potassium, cresol-sulphate of potassium, catecholsulphate of potassium, indoxylsulphate of potassium, skatoxylsulphate of potassium, etc.

An estimation of the amount of sulphuric acid in this ethereal combination gives, therefore, a more nearly correct indication of the amount of these substances present, and hence of the putrefaction in the intestine.

Putrefactive processes outside the alimentary canal, putrid cystitis, putrid abscesses, putrid peritonitis, etc., have the same result as putrefactive processes within the intestine.

The amount of the ethereal sulphates is in a general way proportional to the degree and extent of the putrefactive processes.

We may now indicate a little more fully the character of the evidence on which this relation between ethereal sulphates in the urine and putrefaction within the intestine is based.

It was at one time held that the aromatic substances in combination with the sulphate were derived directly from aromatic constituents of the food.

But while this may in exceptional instances and to a limited extent be true, especially in herbivore, in the case of animals like dogs and man, who live on a mixed diet containing little or nothing of an aromatic nature, this possible origin has failed to explain the regular presence of these aromatic substances in the urine.

Next, the various tissues themselves came to be regarded as the scat of their formation, and there seemed to be considerable support for this view.

In starving dogs Salkowski (Berichte. dec deutsch. chem. Gesellschaft, Bd. ix, S. 408) found considerable quantities of indoxyl potassium sulphate (indican) present in the urine.

Likewise, R. van der Velden (Ueber die Ausseheidung der gepaarten Schwefelbamen im Harm.

Virchow's Archiv, Bd. 70, 1872) found the ethereal sulphates reduced only one half when the animal was kept entirely without food for 5 or 6 days. Both Ewald (Arch.f. pathol. Anat., Bd. 75) and Baumann, (Zeit. f. physiolog. Chemic, Bd. x, 1886) however, working upon cases of intestinal fistula in man, found that when

the intestinal contents were withdrawn through the fistula the aromatic substances almost entirely disappeared from the urine.

They further found that when the fistulous opening was closed and the intestinal contents were made to pass through the entire length of the intestine these substances reappeared in the urine in the usual amounts. Kuhne and Nenki have shown that these aromatic bodies, especially indol, come from the putrefaction of proteids.

Artificial pancreatic digestions of albumin were found to yield considerable quantities of indol, but when bacterial aetion was prevented by thymolization, indol and other aromatic putrefactive products were entirely absent.

Thus there is satisfactory evidence that these products, which are formed from the decomposition of proteids in the intestinal canal by the activity of micro-organisms, are absorbed, and are ultimately excreted by the urine.

In confirmation of this is the influence on the separation of ethereal sulphates which is exerted by antiseptics when introduced into the intestine.

As shown by Baumann (Baumann and Wassilieff. Zeitsch. f. phyxiolog. Chemie, Bd. G, S. 112) and Morax, (Bestimmugen der Darmfaulniss Durch Aetherschwefelsauren im Harn. Zeitsch. f. phiysiolog. Chemie, Bd. x, S. 318, 1886) putrefaction can be cheeked in the intestine of the dog by inanition (lack of nourishment) together with the administration of large doses of calomel or iodoform. Under these circumstances a concomitant disappearance of ethereal sulphates in the urine was noted. In man it is not possible to administer sufficiently large doses of these drugs to produce this result.

Rovighi, (Die Aetherschwefelsauren im Harn und die Darmdisinfeetion. Zeitsch. f. physiolog. Chemie, Bd. XVI) working in the laboratory of Baumann, has recently shown that the administration of terpenes and camphors, (Rovighi (loc. cit.) experimented also with kumyss. He found that by taking 1.5 litres of kumyss daily for 5 days the ratio of his sulphates was reduced from 10.7 to 20. He does not state whether he took other food at this time, hut it is presumed that he did.

The decided influence of the kumyss is probably to be referred to the lactic acid it contains), in the case both of men and dogs, diminished the separation of ethereal sulphates to only a moderate extent in men, but considerably in dogs.

It is interesting to note in this connection that, as pointed out by Rovighi, there are variations in the separation of the ethereal sulphates at different hours of the day. Their separation is greatest during the day, more especially after meals.

This fact illustrates the importance of drawing conclusions only from the examination of the 24 hours urine.

The amount of putrefactive products in the urine is directly related to the amount of proteid food ingested, and it is important to consider this factor in drawing conclusions as to the degree of putrefaction that is going on.

The total sulphates of the urine run parallel to the elimination of nitrogen.

(We have found in a large number of cases, both epileptics and non-epileptics, that the ratio of the total sulphates to the urea is singularly constant, being usually from 1:10 to 1:13).

Hence they indicate in a general way the extent of nitrogenous metabolism, which is directly dependent on the amount of nitrogenous food absorbed.

Thus, by a comparison of the sulphates in ethereal combination with the other (so-called preformed sulphates) sulphates of the urine, we have an index of the degree of intestinal putrefaction, without further consideration of the amount of proteid food ingested.

It is usually stated that under normal conditions the relation between the ethereal and preformed sulphates is about 1 to 10. (Hoppe-Seyler. Ueber die Ausscheidung der Aethersehwefelsauren im Urin bei Krankheiten. Zeitsehr. f physiol. Chemie. Also R. van der Velden, loc. cet., Bd. xii, S.1, 1888)

But, while this may represent in general terms the normal relation, it is liable to fluctuation with the nature of the food. On a diet composed of vegetable proteids the proportion of ethereal sulphates may be somewhat increased (1 to 8), while on a milk diet the ratio normally falls very much (1 to 20 or less).

We may now pass to the consideration of the results obtained from the study of the products of intestinal putrefaction in our eases of epilepsy.

We may begin with the examination of the grand mal cases, for these are greatly in the majority, and show the most pronounced deviations from the normal.

Taking first the sulphates (since, as we have seen, they are the safest general indication of the degree of intestinal putrefaction), we observe that a very large proportion of our eases show a higher ratio of the ethereal to the preformed sulphates than is observed in health. It is convenient to group the eases of grand mal according to the degree to which the sulphates deviate from the normal.

Of the 29 cases, only 2 (V and XX) can be called distinctly negative; 6 (Cases IV, VI, VII, XIII, XVII, and XXIV) are classified as doubtful, because the results are not sufficiently distinctive, either of health or disease, to enable us safely to interpret them; 3 (Cases VIII, XVI, and XXV) are classified as giving decided results, and all the rest, 19 in number, as giving results that are very marked.

It is important to note that on some of the days on which the ratio of the sulphates is excessively high the total amount of ethereal sulphates is distinctly high, while in other eases it is low.

Thus, in Case I, on 21 January the ratio of sulphates is 2.7, and in Case II, on 5 January it is 3.2. Both these ratios are very high and nearly equal, but in Case I the total ethereal sulphates are 53.3 milligrams, while in Case II they are 16.2 milligrams. That is, in Case I the ethereal sulphates are present in more than three times the quantity than in Case II. Is the significance of these ratios (2.7 and 3.2) approximately the same notwithstanding the great difference in the total quantities of the ethereal sulphates?

In interpreting our results are we to give most weight to the ratios of the sulphates or to the total ethereal sulphates? While we ought to be guided mainly by the ratios, we must in some eases take into consideration also the totals, (The totals vary so enormously in heathy adults (100 milligrams to 300 milligrams in the day) that the importance of relying on the ratios is especially impressed upon us. The establishment of a standard in health for the ethereal sulphates involves

considerations very similar to those that apply to the establishment of a criterion of uric- acid excretion. See (N.Y. Med. Jour., 4 June 1892)

In the instances that have been cited the ratios are so high that we can not doubt that they were caused by excessive intestinal putrefaction in both cases, for, though in Case II the total ethereal sulphates were only 16.2 milligrams — an amount usually quite within the limits of health — we must regard this as excessively high in the presence of so small an amount of the preformed sulphates as is here present (52.5 milligrams).

This amount (52.5 milligrams) of preformed sulphates is less than is usually observed in health, and depends on the fact that only a small amount of nitrogenous food has been assimilated. We know, however, that when the preformed sulphates are reduced to this amount in health, the combined sulphates are correspondingly reduced, a relation of about 1 to 10 being maintained.

When, therefore, we find that the ethereal sulphates are not correspondingly reduced, as in Case II, we have no hesitation in pronouncing the figures distinctly abnormal.

There are many instances, however, in which it is almost impossible to decide whether or not a case deviates from the normal. Thus, in Case XIII we find two ratios, 11.2 and 8.7, the former certainly normal, the latter a little high, but not positively outside the limits of health. In this ease the ethereal sulphates are small in amount (17.9 milligrams for 2 days), and this leads one to question whether the ratio of 8.7 is to be regarded as distinctly abnormal.

The case has therefore been classed with the doubtful ones. Having established the fact that a majority of our cases give unmistakable evidence of an excessive formation of putrefactive products in the intestine.

If in any given case in which there are evidences of excessive intestinal putrefaction a more or less constant relation exists between the degree of this excess and the frequency or character of the seizures, such a relation may reasonably be considered evidence of something more than coincidence, and the more constant the relation the more strongly does it suggest a dependence of the seizures on toxic substances produced by the excessive putrefaction in question.

Before attempting any generalizations, we may advantageously take up certain eases with a view to seeing what they teach regarding such a relation.

One of the first seizures that is available for the present inquiry is that which occurred in Case I, on 25 January. On 21 January the ratio of the sulphates was higher than at any period recorded in this case — namely, 2.7; on the day of the seizure it was 4.4, and on the day after it was 7.6. The ratio on the 22nd, immediately before the seizure, is unfortunately unknown.

Between 9 December 1891 and 21 January 1892, there are 9 estimations of the sulphates, which for this period give a ratio much nearer the normal than for the period just before and at the time of the seizure. In the 6 weeks mentioned there was one paroxysm only (2nd January).

It is to be noted that on 21 January the amount of indican (which is regularly present greatly in excess) was 56.9 milligrams, that is, higher than at any time

between 5 December 1891, and 23 January 1892, with one exception (1 January 1892), when the indican reached 57.3 milligrams, but when the sulphates give a less abnormal ratio (7.9) than those above noted. On 1st December the patient began to take sodium salicylate.

Between 1st December and 8th December he took fifteen grains three times daily. From 8th December until 27th January he took 10 grains 3 times daily, the bromides being continued. On December 6th the ratio of the sulphates was 13 — i.e., within the normal. On December 9th it was 7.3, but the quantity of indican was very low indeed (possibly within the normal), and much lower than during October and November, when the patient was having frequent seizures (about once a week).

The quantity of indican remained relatively low (as compared with October and November) until January 1st, when it rose to 57.3 milligrams. The day following there was a mild seizure, but during the entire month of December there was not one. On the day before this seizure the sulphates gave a ratio of 7.9, a much higher ratio than the average of the days preceding.

On the day of this seizure the ratio of sulphates was 6.4 and the indican 45.3 milligrams. It is true that on 4th January there was a ratio of 3.9 and no seizure, but the indican was distinctly lower than on the days of the 2 seizures we have mentioned.

The patient had another seizure on February 3rd. On this day the ratio was 9.1, but the ethereal sulphates were in large amount (373 milligrams), and the indican was very high (69.5 milligrams).

On March 31st the patient went on an almost exclusively milk diet, which had the effect of greatly reducing the ratio of sulphates and of somewhat diminishing the frequency and severity of the seizures. The seizures during this period were but imperfectly studied, and we can not safely draw conclusions from them, but it is interesting to note that the ratio for the day of the seizure of the 28th of April was 11.6.

This ratio would ordinarily be regarded as belonging to health, but it is much higher than should be observed in an individual upon a milk diet (1 to 20).

On May 6th the ratio was 10.6, and for the first time in our knowledge of the case indican was almost wanting. On May 9th there was a strong indican reaction, and on May 10th there was a strong indican reaction and a seizure.

In this case, therefore, there was a general correspondence between the seizures and the degree of putrefactive action in the intestine. When the salicylates were first given they exerted a check upon the products of intestinal putrefaction, and during this time seizures were absent.

As soon as this antiseptic effect wore away (as shown by the reappearance of the products of putrefaction in excess) the seizures recommenced.

In Case II there was a seizure on January 5th, when the ratio of sulphates was high (3.2). On January 14th there was another seizure, and on January 12th the sulphates were again high (4.9), and a considerable amount of indican was present. On the day following the seizure the ratio of sulphates was considerably

lower (7.8), and the total ethereal sulphates were less in amount than on either the 1st or 12th. Two seizures occurred on June 30th, but, as observations were made only on the 25th and the 28th (when the ratios were high 3.5 and 5.1), we can not reach any conclusion in the case of these paroxysms.

A seizure occurred on 15 February, when the sulphates were not very high relatively or absolutely. In general, however, we may say that the ratio of sulphates has run unusually high in this case about the time of seizures — i.e., just before or at the time of the seizures. But it is to be regretted that so few observations were made in the interparoxysmal periods.

In Case XIX we have a ratio slightly higher on the day of the seizure than on the day before or after. The total amount of ethereal sulphates was considerably higher on the day of the paroxysm than on that before or after.

In Case XXI the ratio was 5.6 on the day of the seizure, 5.9 on the day before, and 5.7 on the day after. The ethereal sulphates were slightly greater in amount on the day of the seizure and on the day before than on the day after.

In Case XXII the ratio was 5.9 on the day of the seizure, 9.9 on the day before, and 6.5 on the day after. On the day of the paroxysm the total ethereal sulphates were greater than on the day before, but about the same as the day after. The seizure in this case was a slight one, consisting of loss of consciousness and slight general tonic spasm, but without clonic spasm.

In Case XXIII the ratio was 6.6 on the day of the seizure and on the day before. On the day after it was 6.8.

The ethereal sulphates were greatest in amount the day before the seizure, and were greater on the day of the seizure than on that following it. But the differences in the ratios are so slight that the case is not conclusive as regards the particular point of our present inquiry.

In Case XXIV the ratio was 4.4 on the day of the seizure, 6.6 the day before, and 11.4 the day after. The ethereal sulphates were about twice as abundant on the day of the seizure as on the day before or the day after.

In Case XXVIII the ratio was 5.0 on the day of the seizure, 4.2 on the day before, and 5.9 on the day after. The ethereal sulphates were greater in amount the day before and the day after than on the day of the seizure. It is difficult to interpret the figures in this case.

The cases of grand mal which have not been mentioned in the foregoing enumeration were not available for the inquiry in point, either because the seizures were too numerous, because drugs were given which are thought to affect intestinal putrefaction, or because no individual seizure was carefully studied in its relations to the interparoxysmal period.

In Cases X and XIV sodium salicylate was given in doses of 10 grains 3 times daily (the bromides being continued) for 7 days, to see whether they diminished the products of intestinal putrefaction and concomitantly the number of epileptic seizures. In Case X the results were negative in that the drug failed to exert an appreciable effect upon either the products of putrefaction or the seizures.

In Case XIV, however, there was a pronounced diminution in the ratios of the

sulphates at the time the drug was given and a distinct diminution in the number of seizures. But the ratio of sulphates was not brought inside the limits of the normal, and the seizures, though reduced in frequency, continued numerous.

This observation, together with that made upon Case I, shows that a reduction of the products of putrefaction by means of sodium salicylate is likely to be associated with at least a temporary reduction of the number of seizures.

It was determined to see whether it is possible to increase the products of putrefaction experimentally and concomitantly the number of seizures.

For this purpose it was decided to make use of considerable doses (20 grains) of sodium bicarbonate, it having been shown by Stadelmann (Ueber den Einfluss der Alkalien auf den meuschlichen Stoffwechsel. Bericht uber die Verh. des IX. Congresses. Abstract in Centralblatt f. kiln. Medicin, 1890, No. 27) that in health the antiseptic action of the gastric juice may be diminished by alkalies, with a consequent increase of the products of intestinal putrefaction. The results of our experiments were as follows:

In Case XVI, 10 grains of sodium bicarbonate, 3 times daily, were given for 5 days, and then 20 grains, 3 times daily, were given during 5 days more. During these 10 days the patient had ten seizures, 8 of them occurring during the first 5 days of the period. During the 30 days preceding this seizure the patient had 11 seizures only — i. e., she had about the average number for an entire month.

Reference to the table shows that during the period when the soda was given the ratio of sulphates was very greatly increased as compared with the preceding days.

The total ethereal sulphates were also markedly increased, but it is interesting to note that this increase is confined to the first period of 5 days when the seizures were most numerous.

It should be noted also that the urea excreted was very small in amount while the soda was being taken, this being due, no doubt, to the loss of appetite caused by the administration of the salt. It is possible that this greatly diminished assimilation of nitrogenous food, as shown by the diminution in urea, had a tendency to diminish the number of seizures rather than to increase them.

It would be interesting to know what would have been the effect of the sodium salt upon the seizures and upon the ethereal sulphates had the assimilation of nitrogen been maintained at the level of the days preceding the experiments.

In Case XXV sodium bicarbonate was given in doses of 15 grains, 3 times daily (with meals), for 7 days. During this period there were 2 seizures, 1 on each of the last 2 days. Two consecutive seizures have not been noted before in this patient.

During the period when these seizures occurred the ratios ran higher than usual, and the total ethereal sulphates were somewhat increased. In the week following the discontinuance of the sodium bicarbonate (perhaps longer) there was no seizure, and the ratios ran very nearly normal.

In Case XIV 20 grains of sodium bicarbonate were given for 5 successive days, soon after the administration of sodium salicylate for 6 days.

Putrefaction was unquestionably increased, as is shown both by the total

ethereal sulphates and by the ratios. The number of seizures, however, continued small. This is in direct opposition to what we should have expected. No definite conclusion can be drawn as to the effect upon seizures of the increased putrefaction induced by the administration of Sodium bicarbonate, since the evidence from the three experiments is conflicting.

The study, therefore, of our 29 cases of grand mal shows that in 21 cases there was present unmistakable evidence of excessive intestinal putrefaction. Furthermore, a large proportion of the cases in which the observations were of such a character as to render a comparison possible, showed at least a general correspondence between the seizures and the degree of intestinal putrefaction as gauged by the analysis of the urine.

This correspondence has been sufficiently close, in our judgment, to warrant the suspicion that intestinal putrefaction may play an important part in determining the occurrence of epileptic seizures in some cases of epilepsy, perhaps in a considerable proportion of cases.

More than this we are unable to say at present, for those of our observations that relate to the concomitant variations of seizures and products of putrefaction are too few in number to permit a statement regarding epileptic seizures in general, although they appear convincing as regards most of the cases that have been studied.

We may conclude, then, that the excess in the products of intestinal putrefaction which we have noted is a characteristic of a considerable proportion of all cases of idiopathic grand mal, for the number of our cases is sufficiently great to exclude the possibility that our results depend on the mere coincidence of intestinal derangement and epilepsy which one might expect occasionally to meet.

Nevertheless the question arises. How does it happen that so many cases of epilepsy give evidence of this abnormal condition?

Is it not possible that there may be some peculiarity about the life of the epileptic which predisposes him to excessive intestinal putrefaction?

Two possible sources of error in the interpretation of results suggest themselves in this connection:

1st - Peculiarities in Diet; and
2nd - The Influence of Bromides.

As regards the possible dependence of our results upon any peculiarity in the diet of our patients, it may be said that no peculiarity existed such as would account for these results. It is possible that the use of a large proportion of nitrogenous food, such as readily undergoes putrefaction (especially vegetable nitrogenous food), might bring the ratios of the sulphates within the pathological limits, but none of our cases were known to be upon such a diet.

These cases were, moreover, drawn from several different sources, and it is hardly to be thought of that the same unusual dietetic condition should have been

operative in each of these groups of cases. Again, in several of our cases the dietary was one which included a minimum of nitrogenous food, and these eases are among those that show the greatest deviation from the normal in the products of putrefaction.

We can not, therefore, seriously entertain the idea that the diet in our cases affords an explanation of the results.

The possibility that our results may depend, in part at least, upon the influence of bromides is not so easily to be disposed of. Almost all of the cases of epilepsy were taking bromides at the time of our study and for a considerable

period before, and one might hold, with some plausibility, that this circumstance invalidates the interpretation of results, since there is reason to think that long-continued, large doses of the bromides may give rise to intestinal disorder, and very possibly to excessive intestinal putrefaction.

(Fere. Bromuration et antisepsie intestinale. Nouvelle iconographie de la Salpetriere, 1890, p.349)

As we have been able to find few epileptics in whom this possible influence of the bromides can be ruled out, it is difficult for ns to give direct proof that no such influence was exerted in the cases that have been under consideration.

The question really resolves itself into one of probabilities, and it is believed that the following considerations render it in the highest degree improbable that the bromides are responsible for the evidences of putrefaction that have been dwelt upon:

1. The quantity of the bromides taken in our cases was moderate (20 to 80 grains per day, the "mixed" bromides being used in many eases), and there is no evidence that moderate doses of the drug give rise to intestinal putrefaction, either directly or indirectly, whatever may be the case with very large doses (see Fere – loc.cit.). (3 to 4 drachms (a unit of weight formerly used equivalent to 60 grains) in 24 hours).

2. An already stated, in the cases where comparison was possible the evidences of intestinal putrefaction were distinctly greater about the time of the seizures than in the intervals, notwithstanding the fact that the bromides were given in equal doses from day to day. This increase in the products mentioned at the time of seizures could hardly be explained by any known effects of the bromides.

3. As already stated, seizures have been controlled by influences which coincidently controlled the products of putrefaction. It is impossible to explain this fact on any theory connected with the action of the bromides.

4. There are among our eases of epilepsy several (IV, XXIX, and XXX) in which bromides have been taken in moderate doses for a long period of time, but in which there is no evidence of excessive putrefaction in the contents of the intestine. On the other hand, there are among the cases two (VI, XXVI) in which the patient has had no bromides for many months, but in which the putrefactive processes nevertheless run high.

We have at least obtained evidence which forcibly suggests that Epileptic Seizures are sometimes the consequence of Toxic Substances produced in the intestinal canal, and that the formation of these substances is related to processes of a putrefactive nature.

If, as we suspect, Intestinal Putrefaction plays a role in the causation of some cases of epilepsy, it is certainly operative only in determining seizures, and probably acts in most cases, and perhaps in all, upon that predisposition to the excessive liberation of nerve force, which we must recognize as by far the most powerful factor in the causation of the disease.

Note: It is interesting to note the large number of cases in which dark (black) urines were obtained, i. e., urines which when voided appeared normal, but on becoming alkaline and on exposure to the air acquired a dark colour, first forming a black zone at the exposed surface of the liquid.

This appearance is known to be due to the presence of hydroquinone and pyrocatechin, 2 aromatic substances formed by intestinal putrefaction. Although no attempt has been made to study the urine in regard to this particular point, the formation of the dark colour was noted in Cases XIV, XV, XVI, XVIII, XXI, and XXVIII.

Several other cases, studied earlier, gave the same appearance, but no importance was then attached to the peculiarity.

Sulphates were determined by the Salkowski-Baumann method; urea by Pfluger's modification of Liebig's method or from the total amount of nitrogen as estimated by the Kjeldahl method; uric acid by the Ludwig-Salkowski method; indigo-blue by Jaffe's gravimetric method; phenol after the method of Koppe-sehaar; and oxy acids after the manner described by Baumann." - Dr C. A. Herter, MD, Lecturer Anatomy and Pathology of the Nervous System, New York Polyclinic and Dr E. E. Smith, PhD, in "New York Medical Journal", 1892.

Chapter 59

Stasis

"Stasis (from the Greek, to stand). A termination denoting a standing, or a position in a place." - in "A Dictionary of Terms Used in Medicine and the Collateral Sciences", 1865.

Copro-stasis

"Copro-stasis (corpo from the Greek, faeces). Undue retention of the faeces in the intestines." - in "A Dictionary of Terms Used in Medicine and the Collateral Sciences", 1865.

Apostasis

"Apo-slasis (from the Greek to stand). An aposteme, imposthume, or abscess. When a disease passes away by some outlet, Hippocrates calls it apostasis by excretion; when the morbific matter settles on any part, he calls it apostasis by settlement; and when one disease turns to another, apostasis by metastasis." - in "A Dictionary of Terms Used in Medicine and the Collateral Sciences", 1865.

"**Sir Arbuthnot Lane was the first to direct our attention to Chronic Intestinal Stasis. Now its importance has become universally recognised.**

The book "Chronic Intestinal Stasis" 1923, deals with the condition as seen by the radiologist, and gives a general account of stasis and its results.

Chronic Intestinal Stasis is due to abnormal delay in the passage of the intestinal contents through some or all parts of the intestines, and to the absorption of bacterial toxins resulting from intestinal stagnation.

Stasis may commence insidiously, and neither the victim nor his friends may be aware of the mischief that is slowly but surely brewing. Sooner or later, however, the evil compels attention, either by the general ill-health it produces, or by some acute lesion of a tissue or an organ, arising suddenly, and without obvious provocation. So diverse and severe are the changes wrought by stasis that there is urgent need for a widespread understanding of the disease, which has only come to be appreciated since the genius of Sir Arbuthnot Lane disclosed its nature.

He has led us a long way on the road to a correct understanding of the essential unity of disease, and has taught us to regard the organism as a whole, and not as an assemblage of organs in water-tight compartments.

Text-books are - of necessity = arranged under headings classified according to organs or regions.

This system, necessary for purposes of instruction, has a fundamental fault.

It fosters the fallacy that disease involves individual organs, whereas, in truth, though only one organ cries out for help, the whole system is out of gear.

This fallacy has imbued the medical profession for so many generations - indeed centuries - that it is most difficult to eradicate.

I shall not have worked in vain if this volume helps my readers to take a broad and comprehensive view of disease." - Dr Alfred C. Jordan, CBE, MD (Camb.), MRCP (Lond.) in "Chronic Intestinal Stasis, A Radiological Study", 1923.

"Removes the obstruction, lets the life-giving current have full play, and the man is restored to health." *- Dr A. T. Still, MD, DO, in "Autobiography", 1897.*

Stasis in the Causation of Disease

The Emunctologist should have a clear understanding of Stasis as a factor in the causation of disease.

Stasis either:

1. Venous Stasis, stasis in the circulation of blood.
2. Lymph Stasis, stasis in the circulation of Lymph.
3. Bile Stasis, obstruction of the bile ducts results in focal bile stasis.
4. Intestinal Stasis, stasis of the contents of digestion present in the colon.
5. Portal Stasis.
6. Uterine Stasis.

All stasis is detrimental to all organs of the body.

Any matter, that is present in stasis, that is meant to circulate, rather than to stagnate, starts to decompose in situ. This will inevitably affect the surrounding cellular tissue.

Venous Stasis in Optic Neuritis

"Dr. E. Weigmann, in Klin. Mon. fur Aug., reports the following:

On 3 May 1911, a woman, aged 40, consulted him on account of occasional obstructions of sight within the last 2 weeks, which set in after chancing the position of the body or head e. g., after stooping in reading and writing.

Vision was nearly normal, the visual field showed a slight contraction for colours.

Both optic discs were very red, their borders indistinct, veins enlarged, the tissue of the discs slightly opaque, the lamina cribosa and walls of the vessels on the discs veiled. The discs were swollen, but not projecting.

Near the left disc were 2 small retinal hemorrhages.

The treatment consisted in ironsajodin. On 25 January 1912, the opthalmoscopic condition was about the same, but the discs were somewhat paler and the arteries narrower. There was a slight contraction of the left visual field in the inferior nasal quadrant.

The only etiological element was, that the patient suffered the preceding winter for one quarter year from a severe whooping cough.

He attributes the obscuration after changing the position of the head to transient disturbances of circulation.

The effection of the optic nerve may have been produced mechanically by intracranial transudations in consequence of venous stasis, brought about by the paroxysms of whooping cough, or by hemorrhages in the optic sheathes or by toxins of whooping cough bacilli, described by Bordet and Gengou." - in Journal of the Medical Society of New Jersey", Vol.9, 1913.

Stasis of Bile

"Relieve chronic constipation, especially when due to biliary stasis; check intestinal fermentation and putrefaction, and prevent and relieve intestinal auto-toxemia." - in "The Medical Standard", 1909.

"Intermittent biliary stasis is admittedly the principal predisposing cause of cholelithiasis; and the stasis is to be thought of as effective, in many instances at least, through the excessive biliary inspissation for which it gives opportunity. In this way a normal gall bladder can become, merely through functional activity, a menace to the organism." - Dr Peyton Rous, MD, Dr Philip D. McMaster, MD in "Physiological Causes for the Varied Character of Stasis Bile", 1921.

"Dr. P. Mayer, in The Lancet, 1 June 1912, emphasized the point that the guiding principles in the treatment of Cholelithiasis (gallstones) are de rived from the well-established facts that stagnation of the bile is the fundamental condition for the production of concretions, and that in chronic inflammatory cholelithiasis infection plays the most significant role, infection in its turn being favoured by stasis of the bile.

Since the formation of stones is always a secondary phenomenon, it would be irrational to direct treatment exclusively against the stones them selves, because, even after the expulsion of some of the stones, if the stasis and inflammation continue, stones still remaining behind may grow larger, and new stones may form, as a consequence the conviction becomes more and more firmly established that the object of treatment consists not in the expulsion of the stones, but in the prevention of the formation of new stones by combating stasis and inflammation, and in bringing stones already present to rest, thus inducing a latency of the

disease, which is in effect almost a recovery, since stones often remain for years as harmless foreign bodies as soon as the flow of bile becomes normal and the inflammatory process ceases." - in "Journal of the Medical Society of New Jersey", Vol.9, 1913.

Bile Pigment

"Bilirubin, the colouring matter of the bile, is chemically identical with hematoidin. It is a product of the liver cells, being formed by them from hemoglobin.

Bile sometimes escapes into the circulation either as the result of bile stasis or in consequence of necrosis of liver cells, and diffuses into the organs and tissues, staining them a yellow to green colour.

The resulting condition is known clinically as icterus or jaundice (yellowish or greenish pigmentation of the skin and whites of the eyes due to high bilirubin levels).

Bile stasis is caused throughout the liver by obstruction of the bile duct or the common duct, usually by gall-stone or tumour, or focally by obstruction of the smaller bile vessels by inflammatory exudation, by sclerosis, or by pressure from an infiltrating tumour.

Bile stasis results in dilatation of the bile capillaries, most marked around the hepatic vein in each lobule. The bile often breaks through the wall of liver cells and escapes into the lymph-space between the cells and the walls of the sinusoids.

Here the inspissated masses are incorporated and gradually digested by endothelial leukocytes.

The fluid bile apparently passes directly into the circulation through the endothelium lining the sinusoids and is carried all over the body. It stains nearly all tissues yellow.

If the icterus is persistent the colour may turn to green.

When the liver is severely injured by toxic and infectious processes (phosphorus poisoning, acute yellow atrophy, sepsis), bile escapes into the circulation. This is due in some instances at least to necrosis and dissolution of the liver cells allowing the bile to escape from the bile capillaries.

Jaundice

Icterus (jaundice) is always of hepatogenous origin. This is shown by the constant presence in the blood of bile acids, which can arise only in the liver.

Enough hematoidin (chemically identical with bilirubin) is never set free by diffusion from hemorrhage, or by breaking down of the corpuscles within the circulation to cause icterus. Bile pigment usually diffuses and simply stains most cells and intercellular substances, but the central nervous system is never coloured in the adult and rarely in children.

Necrotic tissue, on the other hand, is readily stained as shown by the classical examples, the sloughs in the intestine in typhoid fever and the caseous (necrosis with conversion of damaged tissue into a soft cheesy substance), tubercles involving the bile ducts in the liver.

Sometimes the bile pigment is deposited in granules which are usually yellowish but may be greenish if old.

They occur most commonly in the liver cells, in the endothelial cells lining sinusoids and capillaries, in renal epithelium, etc.

The pigment itself does not seem to be injurious to cells, but the accompanying invisible bile acids and other substances may do damage.

Bile pigment is very rarely found in crystalline form in the adult as a result of postmortem changes; in the macerated fetus its occurrence is more common.

Bile pigment from obstruction of bile ducts

In general bile stasis, it is located around the hepatic vein in the centre of the lobule, chiefly in the dilated bile capillaries near the hepatic veins, but also in endothelial leukocytes between the liver columns and the walls of the sinusoids.

Less often it is found as granules and small elongated masses in the cytoplasm of liver cells. When the bile stasis is focal, as in the different forms of cirrhosis, the inspissated bile may be in any part of the lobule or even in the bile ducts.

Mechanical Lesions: Bile Stasis

When the outflow of the bile from the liver or any part of it is prevented the bile ducts and capillaries back of the obstruction become distended, often to a marked degree. If the obstruction affects the common bile duct a uniformly distributed general bile stasis occurs. If small bile ducts here and there are blocked then a focal bile stasis results. General bile stasis is usually caused by a calculus in the common bile duct or by a cancer involving it.

Focal bile stasis is common in different forms of sclerosis of the liver, where it is due to constriction of bile ducts by contracted connective tissue; and in infectious processes extending along the bile ducts, where the inflammatory exudate present more or less prevents the escape of the bile.

When general bile stasis exists, unless the liver is hardened “in toto”, the bile quickly escapes from the dilated bile ducts and also from the bile capillaries near the portal vessels as soon as the organ is sectioned, and these vessels contract.

As a consequence, on microscopic examination after fixation the bile is found, as a rule, only in the bile capillaries around the hepatic veins. In focal bile stasis, however, the bile ducts are occasionally found distended with bile.

On microscopic examination of the liver, in which general bile stasis has existed, the bile is found in masses distending the bile capillaries around the hepatic veins.

It also occurs as a fine meshwork where secreted within the cytoplasm of the liver cells, being unable to flow out into the bile capillaries.

It collects in the form of granules and small irregular, usually elongated masses, and mechanically or chemically often leads to necrosis of the affected cells. Occasional mitotic figures show that regeneration of the liver cells may take place.

Microscopic evidence certainly favours the view that it is chiefly the liver cells around the hepatic veins in the inner half or less of the lobule, which are concerned with the secretion of bile. The cells around the portal vessels never show the same changes.

If the obstruction is complete and persistent, the inspissated bile frequently breaks through the wall of the liver cells surrounding it and escapes into the lymph-space lying between the rows of liver cells and the walls of the sinusoids.

Here the masses of bile are taken up by endothelial leukocytes, which migrate into the space, and are gradually dissolved.

Frequently in small areas the endothelial leukocytes outnumber the liver cells.

The presence of occasional pigmented endothelial leukocytes in the lymph-channels around the portal vessels indicate that a little, at least, of the dissolved bile enters the circulation in that way.

On the other hand, the endothelial cells lining the sinusoids are usually pigmented only in the neighbourhood of the hepatic vein, where the inspissated bile escapes from the bile capillaries and is dissolved by the action of endothelial leukocytes.

This relation of escaping bile and pigmented endothelial cells suggests that a part at least, perhaps most, of the bile enters the circulation directly by osmosis through the endothelial cells lining the sinusoids.

This view is favoured by experimental work on dogs which shows that the bile does not enter the circulation through the thoracic duct.

Some of the masses of bile in the bile capillaries and in the cytoplasm of the liver cells may be set free by necrosis of the cells, but apparently no extensive necrosis of liver cells is caused simply by the bile being dammed back, and no sclerosis around the hepatic veins results.

On the other hand, no lesion of any sort is formed in the region of the portal vessels from simple uncomplicated bile stasis.

If infection of the bile ducts occurs, however, a very different appearance is caused, as will be described later.

In focal bile stasis the cell changes due to the distention of the bile capillaries are similar to those already described, but may occur in any part of a lobule or throughout it in the areas affected.

As a result of general stasis of bile around the hepatic veins, the centers of the lobules appear yellowish green to dark green on section, in more or less well marked contrast to the lighter stained peripheries.

In focal bile stasis the affected areas stand out distinctly of a dark green colour.

Generalized bile stasis due to obstruction of the common duct

It is not at all uncommon to find all these different processes (hyaline degeneration, leukocytic infiltration, regeneration, proliferation of connective tissue, and focal bile stasis) present in one and the same liver section.

Tumours in the Causation of Bile Stasis

Carcinoma of the papilla of the common bile duct occurs occasionally and is clinically of great importance, although it may not exceed one centimetre in diameter, because it usually leads to complete bile stasis.

Infectious Cirrhosis

When bile stasis exists from obstruction of the common bile duct, infection along the duct is not infrequent.

Of greater importance, however, are cases of primary infection along the bile ducts. This condition apparently occurs most frequently in children.

It is attended with fever, jaundice, and often rapid enlargement of the liver.

In one acute case the etiologic agent was a Gram-negative bacillus, probably bacillus coli. The lesion consists of an inflammatory exudation in the bile ducts and in the periportal connective tissue.

Where the lesion is acute the exudation consists of polymorphonuclear leukocytes, serum, and fibrin. Where the process is less active the exudation consists chiefly of endothelial leukocytes, many of which are phagocytic and contain fragments of cells.

Mitosis in endothelial leukocytes is found occasionally.

Lymphocytes are present in relatively small numbers.

Proliferative reaction on the part of the fibroblasts is well marked and evidently follows injury to the connective-tissue cells by the toxins from the bacteria.

The bile ducts are much distended by the inflammatory exudation into them, and in places the lining epithelium has been entirely destroyed.

The connective tissue surrounding the bile ducts and portal vessels is greatly distended by the exudation which fills all the lymph-vessels and spaces so that the portal tissues show up as broad bands.

In many places the lesion is encroaching on the adjoining liver cells, which show first a marked granular degeneration of the cytoplasm and then necrosis.

Invasion and dissolution by leukocytes follow.

In this way the lesion spreads more or less irregularly towards the hepatic veins.

In those parts where the lesion is older and the exudation is less active the bile-ducts are dilated and appear much increased in number, as though a diffuse bile-duct adenoma were present in the liver.

This appearance is probably due to contraction following marked dilatation and

stretching of the ducts when the lesion was more acute.

In many places the inflammatory exudation in the smaller bile ducts leads to occlusion of them and to obstruction to the out flow of bile, which appears in the ducts above the point of obstruction in the form of yellowish green inspissated masses.

The obstruction is focal only, however, not general, and this accounts for the moderate degree of jaundice produced.

This type of infection is likely to recur so that much destruction of liver cells and production of connective tissue may occur.

In one case a typical coarsely lobulated liver was produced in a boy of 14 in about 6 months by three attacks. The situation of the lesion chiefly around the portal vessels seems to be fairly characteristic.

In 2 infants born jaundiced the common bile ducts were found obliterated, and the bile ducts throughout the liver were surrounded by a thick zone of fibrous tissue.

This condition suggests strongly an intra-uterine infection extending along the bile ducts. This type of lesion resulting in sclerosis (infectious cirrhosis) corresponds to acute and chronic pyelonephritis in the kidney, often due to the colon bacillus.

Jaundice

Jaundice is the name applied to the yellow hue acquired by the skin, sclera, and internal organs and fluids when they have been stained by bile pigments due to the presence of bile in the blood.

When the bile is large in amount and persists for a long time the colour may become brown or green.

The liver usually appears the most deeply stained, generally a dark green, because in addition to the diffuse bile staining, the lobules often contain masses of inspissated bile in their centres around the hepatic veins.

The kidney comes next in intensity of colour, because in addition to the general staining its cells contain granules of bile pigment which is being excreted through them.

Jaundice usually results from general or focal bile stasis in the liver and the escape of bile, as already explained, into the circulation.

General bile stasis is due to the occlusion of the common or hepatic bile duct by calculus, cancer, gumma, cicatricial contraction and other causes.

Focal bile stasis results from any cause which occludes branches of the bile duct, such as cirrhosis, tumour metastases, abscesses, infection of the bile ducts.

In all these instances the stasis of the bile and the escape of the inspissated masses of it from the distended bile capillaries is readily demonstrated microscopically.

Jaundice may follow central necrosis of liver cells, especially the severer types of the lesion terminating in acute yellow atrophy.

Two reasons may be assigned for the jaundice; in the milder lesions, owing to necrosis and dissolution of the liver cells, the bile capillaries are left open at their outer ends toward the hepatic vein so that the bile can easily escape; in the severer lesions single liver cells and small groups of them are left without connection with the bile ducts; the bile secreted by them necessarily escapes.

Jaundice may occur in midzonal necrosis apparently from the same cause, a break in the continuity of the bile capillary system.

In this group of lesions no inspissated bile is found.

The cause of the jaundice occurring in septicemias with the streptococcus pyogenes, pneumococcus, bacillus aerogenes capsulatus, malaria organisms, etc., is not evident in sections morphologically.

Jaundice in lobar pneumonia may sometimes be the result of a septicemia; in other instances a small amount of inspissated bile may be found in the bile capillaries, but not out side of them.

Although it is strongly denied by many investigators, the possibility still exists that in some instances of jaundice the bile pigment may originate from the blood pigment outside the liver and independently of any hepatic action." - Dr Frank Mallory, MD in "The Principles of Pathologic Histology", 1914.

Stasis of Bile: Favours Bacterial Colonization

"A luxuriant and abnormal intestinal bacterial flora may develop in association with certain diseases of the stomach and small intestine.

Faecal-type microorganisms may colonize the upper small intestine in patients with gastrectomy, jejunal diverticulosis, blind loops, strictures, resections, and fistulae.

The results of these studies at multiple levels of the small intestine show that although many patients had an extensive growth of microorganisms, such as coliforms and lactobacilli, throughout the small bowel irrespective of the causative lesion, the presence of anaerobic microorganisms and free bile acids was found to be related to local anatomical defects.

For example, bacteroides and bile salt deconjugation generally occurred only in relation to areas of stasis.

It appears, therefore, that the micro-environment necessary for growth of this fastidious anaerobe, that is, low oxidation-reduction potential, is available in areas of intestinal stasis.

This requirement appears to be fulfilled in the colon or terminal ileum of normal subjects and in the stagnant area of small bowel in patients with diverticula, strictures, or blind loops." - Sherwood L. Gorbach in "Bacteria, Bile, and the Small Bowel", Gut, 1969.

Chapter 60

The Colon as a Focus of Infection

"**Many a suspected ulcer, infected appendix or serious digestive condition is merely the result of a vicious colonic stasis.**

Most cases of appendicitis are victims of colonic stasis and a definite history of constipation is common. Many are hearty eaters, complain of attacks of dyspepsia, and suffer from a greater or lesser degree of flatulence.

In appendicitis, constipation is the rule, and in constipation, cecal stasis is common. Assuming that a cecal stasis exists (and this can be accurately determined in a case of a chronic appendicitis) one is almost certain to encounter a high degree of bacterial proliferation which extends into the appendix.

Since the appendix has a poorer blood supply and a weaker muscular wall than has the cecum it may readily become the seat of acute infection which, of course, manifests itself by the characteristic symptomatology of acute appendicitis.

Thus a cecum which does not completely empty itself is constantly subjected together with the appendix to this possibility of infection and this is precisely the history that exists in many cases. However, had the cecum been normal or been rendered normal in ample time, appendiceal infection would have been much less likely. That which seems to be a chronic case of appendiceal infection, is usually an abnormal cecum suffering from stasis and a toxic content with or without a chronically infected appendix. Another disturbance frequently encountered as a result of cecal stasis is colitis. Blood and mucus may originate at any point in the intestinal canal. In cases of hypermotility of the tract, the blood may come from the stomach or duodenum and be hastened through the tract and thus escape the action of the digestive juices which effects the darker coloration.

Conversely, dark blood or even occult blood may originate in the colon, especially if a marked stasis exists. Mucus is not affected by the digestive ferments and remains unchanged in its passage through the intestinal canal.

Therefore, mucus may have originated in the nose, throat, stomach or any portion of the digestive tract. **The entire preceding discussion of the colon as a source of infection and as the motivating factor in many disassociated disturbances has assumed the existence of a technic whereby one may accurately diagnose the conditions existing in the colon or its various components and apply the indicated therapeutic measures.**

In order to treat or diagnose the colon effectively it must be viewed as is a sinus; that is, it must be treated in its entirety. Occasionally, **one will be confronted with a case of incurable carcinoma of the stomach, correlated with colonic stasis.**

Where a gastric cancer exists there is often an inability to properly digest the food and the patient consequently suffers considerable because of a coexisting colonic stasis." - Dr Lynn J. Walker, MD in "The Colon as a Focus of Infection", International Journal Medicine and Surgery, June 1931.

Faecal Stasis

"We have already seen that prolonged coprostasis (constipation), attaining to a notable degree, may, under certain circumstances, lead to paralysis and hyperextension of the colon, and in this way to permanent arrest of the current of faeces and to death, with symptoms of ileus (ileus paralyticus).

The same result sometimes follows when, as we have previously said, a paretic, over-loaded loop of the colon, most frequently the sigmoid flexure, sinks into the pelvis, and thereby undergoes kinking, or twisting, or compression by the mesentery of the small intestine; or when the paratytic hyperdistended caecum is displaced towards the median line, and thus becomes bent or twisted about its longitudinal axis.

On making the autopsy of such a case, one is astonished at the size of the colon, or of parts of it, especially the caecum and sigmoid flexure, which, when seen from in front, overlie everything, and often seem to fill the entire abdominal cavity.

Meteorism of the colon (swollen abdomen), due to paralysis, is often so considerable in such cases that the limited space in the abdominal cavity makes meteorism of the small intestine impossible.

The latter, on the contrary, is contracted and pushed backwards, or to one side, by the distended colon.

Sometimes the pressure of these overloaded and meteoristic loops upon the concavity of the liver prevents the escape of the bile, causes jaundice, and makes the faeces light-colored (Cases of this kind given by Bright, 1. c. p. 307; Nelaton, in Boys de Loury's excellent work (Gaz. hebd. V. 28, 1858, partly in Schmidt's Jahrb. Bd. 105, S. 328). See also Wachsmuth, Virch. Arch. Bd. 23, S. 136; and Bamberger, l. c., S. 430, note)." - Dr. H. von Ziemssen, MD, Professor of Clinical Medicine, Munich, in "Cyclopaedia of the Practice of Medicine", Vol. 7, 1876.

Voluntary Evacuations

"T**he regular action of the bowels is of the utmost importance to health. The evils, both bodily and mental, resulting from habitual costiveness, are incalculable**: and yet, there is reason to believe that this habit of body is exceedingly common in civic life." - Sylvester Graham, in "Lectures on the Science of Human Life", Vol. 2, 1839.

Constipation and Dyspepsia

"I take it that it indicates a healthy state of mind when your society turns for a short time to the homely, simple topic, a so-called "practical point".

Constipation and dyspepsia bring misery to a large fraction of the remnant of human beings.

The Combination of Constipation and Dyspepsia

Unfortunately there is a frequent combination.

Constipation is chiefly a matter of the colon, and the colon is merely a receptacle. Why bother with a garbage-box?

It has no physiological significance. Such a view of the matter is, it seems to me, a very unphysiological one.

The colon is, in fact, the terminal part of the digestive tract, yet it is a digestive organ of great importance.

It is not to its discredit that it is obliged to convey the solid excreta of the body; it has much higher functions than as a receptacle for all that is disgusting and odious; much higher functions than that of a sewer.

Experimental physiologists have neglected this region of the body for obvious reasons, but in our practice we occasion ally outrun the physiologists.

We learn something when we demonstrate in practice the prodigious absorbent power of the colon. We perceive that a great number of medicines are absorbed by the colonic mucous membrane, and we find that enormous quantities of milk, eggs and soup may be absorbed in its cavity. We make no doubt that this power of altering and absorbing aliment is not a function freshly gotten up in disease nor newly provoked under the stimulus of nutrient Injections.

We can not believe that it is a vicarious action on behalf of a crippled stomach.

We are obliged to believe that the secretory and absorbent apparatus which serves us so well under some circumstances of disease is active all the year round and under normal conditions.

Its distal and inferior position argues nothing against this.

The stomach and the intestines are not only one continuous tube, but they are organically one organ from end to end.

It matters nothing that some parts of this have been highly specialized; the essential unity of the whole apparatus remains.

Upon this line of thought, we are better prepared to understand that constipation may be a cause of dyspepsia, and is.

To me it appears impossible that the lower part of this organ can be seriously perturbed in its workings, whether by disease or by interference with its functions, and the upper part perform its functions properly. And if we go a little farther and consider the products of intestinal absorption, we shall be still more inclined to the belief that constipation may cause dyspepsia.

I know that deleterious volatile substances are the product of constipation and its associated intestinal dyspepsia.

How do I know that such things are evolved in the dyspeptic intestines?

I know it because I can smell 1 or 2 of these substances, coming from the lungs of people who are too nice to have a stool every day, and because I find that when I can purge these people moderately and restore the normal intestinal digestion, these odours disappear from the breath and the presumption is that

they disappear at the same time from the intestines.

But what has all this to do with what is commonly called dyspepsia, difficult or painful stomach digestion?

These very crude products which probably should never have appeared, or which, having appeared, should have been quickly swept out of the body, we suspect very much retard digestion in the intestines and in the stomach.

We know that stomach digestion is much retarded by any unnatural fermentation or decomposition of food, and we have every reason to believe that the same law prevails in the intestines.

The proper digestive ferments, gastric or intestinal, are probably re-absorbed in great quantity during digestion to be secreted from the blood by the glandular cells in the mucous membranes of the different portions of the digestive tube, and it is hardly conceivable that crude and unnatural gases and other volatile substances, such as we have described, could be received into the blood without interfering, to some degree, with this whole beautiful process of secretion and re-secretion.

Moreover, the dyspeptic's very serious mental and nervous perturbations indicate continually to us that poisoned peptones are highly poisonous to the nervous system at large, and it is probable, to say the least, that they are poisonous to the centres which most immediately and most directly preside over digestion.

This line of thought prepares the way, it seems to me, to an induction that **the blood poisoned by the products of imperfect digestion in a given part of the digestive tract, is in a way to poison all parts of the whole Chylopoietic System (the alimentary canal: chylo- "digestive fluid" + -poiesis "production"), including all glands, from the mighty liver to the smallest group of secreting cells in the mucous membrane.**

Nor should we lose sight of the:

"Essential Oneness of the Whole Gastrointestinal Tract."

I am bent upon quoting experience and upon reasoning backward from experience, and that leads me to say that:

"I know nothing of a cure of dyspepsia in a much constipated patient."

Successful treatment, appears to depend upon a reasonably open slate of the bowels so that the morbid secretions of the constipated bowel may be altered by a new rate or made of secretion or may be swept out entirely. Have observed the brisk perturbation of the stomach which comes with acute disease in the intestinal tract.

Is there an obstruction of the bowels?

There is vomiting. Is there acute inflammation of the intestines in any part?

There is more vomiting, pain and anorexia. Is a part of the bowel paralysed?

There again are gastric symptoms of the most urgent character.

Or, beginning below, let me remind you that many a fine laparotomy for the relief of absolute obstipation has been spoiled by a preliminary lavage of the stomach.

Again and again it has happened, after such preliminary treatment, that the obstruction has "let go", and the surgeon, much chagrined or much relieved, according to his mettle, has packed away his tools.

And all of this brings to us fresh evidence of the essential unity of a tube which is thus animated by reflexes from end to end.

I will say a word or two of dyspepsia (meaning stomach dyspepsia), and constipation.

Not seldom, I believe, dyspepsia is the cause and constipation the result.

We get the Idea, sometimes, from a limited number of cases of acute Indigestion, that the intestines are apt to resent the presence of undigested food that has not been properly converted into chyme, and that this resentment is shown by the single symptom of diarrhoea.

This does happen, but I am convinced that It happens rarely.

Even in the case of the poor little babies who are fed with food which their stomachs can not digest and who have diarrhoea, I am convinced that the Intestines are not provoked immediately to throw out a quantity of serum.

Crude, undigested, fermenting stuff, often times putrescent, tends rather to cause constipation until a true Intestinal inflammation is set up, and then diarrhoea comes as a somewhat tardy and indirect result.

In adults I have seen many examples of the great power of the colon to retain undigested, or even indigestible matter and I am much inclined to believe that the stuff is retained just because it is undigested.

I more than suspect that properly digested residuum is the proper stimulus to the motion of the intestines, and that, until there is a true inflammation excited, constipation is the condition to be expected in a colon loaded with poorly digested material.

Illustrating this, I recall the case of a young man who was a hearty feeder, but who be came very dyspeptic on account of a mild remittent fever.

At a certain date, in response to strong purgatives, he voided a stool which consisted chiefly of the indigestible residuum of canned corn.

The interest of the case lies in the fact that it could be positively ascertained that the corn had been ingested more than two months earlier.

More recently I have seen an old dyspeptic, one who so behaved as to make sure of his dyspepsia,who suddenly developed symptoms of intestinal obstruction, passed bloody urine, and, to his great grief and dismay, lost his appetite. It was presently revealed that he had about a gallon of hardened faeces in his colon and rectum. These masses were brought to the light of day by many obstetric devices, so prodigious were they. I found that they consisted of little more than masses of strawberry seeds, and this settled it that they had been

formed in the bowels of this unfortunate patient fully 3 months before.

We are perfectly well aware that any part of the intestinal tract may suffer complete paralysis by complete distension, and I take it that it is also partly paralyzed by more moderate tension.

Merely to dump into the stomach a great excess of food is one way to secure a fine dyspepsia, and the debris of this gluttonous excess is so bulky that it induces constipation also.

Again, we have reason to believe that the bile is one of the normal stimuli to peristalsis in the intestine. Suppose, now, that the normal amount of food is doubled or trebled; at once, if the amount of biliary matter remains constant, its proportion sinks far below the normal, and by such excessive dilution, its function as the normal stimulus to intestinal peristalsis must be lost in great degree.

Here, again, are constipation and dyspepsia invited by one common cause.

It is a very general law of digestion that the normal contents of the part above is the normal stimulus of the part below.

Food duly insalivated (mixed with saliva) seems to be necessary as a provocative to gastric digestion.

It is a physiological fact, also, that the pancreatic and biliary secretions are not produced in proper quantity unless the chyme is of normal quantity and quality.

And we are not inclined at all to stop at this point, so high in the intestinal tract; our generalizing tendency, which is in general a safe tendency, leads us to strongly suspect that the normal and efficient stimulus to the remoter parts of the intestinal tract, small or large, is the product of good digestion in the upper parts.

A great many facts point that way.

All the secretions of the upper part of the gastrointestinal canal are important and necessary to good colonic digestion.

Let me therefore say that if Dyspepsia breeds Constipation, and Constipation breeds Gastric Dyspepsia, there is a most vicious circle established, and it continually poisons the whole chyle-making apparatus.

That circle should be broken at the easiest point first, and that means that the constipation should be terminated at once." - Dr Dan Millikin, MD, Hamilton, O., Professor of Materia Medica in the Miami Medical College in "The Medical Brief", Vol.19, 1891.

Intestinal Stasis

"Is my desire to present to you the views of Mr. Arbuthnot Lane and his school, upon what we consider to be one of the most fundamental problems with which modern medicine and surgery have to deal.

Before considering the general question of intestinal stasis, I would make a few remarks, not directly connected with the subject, but which serve to explain some of the factors at work in producing this widespread condition.

Mr. Lane 's observations on the skeleton of the coal-beaver and the shoemaker, as well as our everyday experiences in anatomy and surgery, have taught us that

the bony and ligamentous skeleton is nothing more nor less than a crystallization of lines of force.

Wherever there is a repeated stress or strain, nature deposits along such lines of stress or strain, bony or ligamentous tissue, and such deposits as are of general utility and advantage to the species become inherited as permanent additions to the skeleton.

Nature's adaptability to her surroundings, however, is such that a deposit along lines of strain can, and does, occur in the life-time of the individual, as exemplified by the bony bosses on the axis vertebra of the shoemaker and by the evolutionary bands in the abdomen of the constipated individual.

What then are the results of constipation plus the assumption of the erect position, upon the contents of the abdominal cavity?

The first portion of the bowel to be affected is the sigmoid. A band develops attaching the sigmoid loop to the sidewall of the abdomen, endeavouring both to straighten it out and to prevent the accumulation of material up along the descending colon. This band, if properly developed, is of service, but if over-developed, by hindering the passage of matter past it, it increases the condition and a vicious circle is established.

The contents of the large gut being damned back, a heavy transverse colon results, the pull of which is felt largely at the flexures. Bands are in consequence deposited, tending to fix these points.

Now it is a simple mechanical proposition that, in a hollow tube, if there is a fixed point with a tendency to drop on either side of it, this fixed point forms a potential obstruction, which becomes actual when the dropping forces are in operation. Consequently, in the erect position in the constipated individual, a further obstruction develops at the hepatic and splenic flexures.

Let us now consider the caecum. This organ, when loaded, has a tendency to drop in a down ward and inward direction along the wall of the false pelvis.

This dropping force produces a strain along lines at right angles to each other, in a direction upwards and inwards, and up wards and outwards respectively.

The outer limb of this parallelogram of forces crystallizes as Jackson's membrane, while the inner limb is deposited as a band, which may be attached either to the caecum, to the appendix, or to the ileum, forming, in the latter situation, Lane's kink. If this inner limb fixes itself to the caecum, all is well; if, on the other hand, the appendix or the ileum is the seat of attachment, we have again the fixation of a point in a hollow tube with a tendency to drop on either side, and a potential obstruction at the fixed point.

Again, nature may use the appendix as a handy ligament for holding up the caecum and may fix it by its tip to the mesentery of the ileum, a condition which if discovered by the operator is looked upon as evidence of a former appendicitis.

The lumen of the terminal ileum is frequently kinked over such a fixed appendix. If the on-flow of the contents of the ileum is delayed, either by a band,

or by being held up over a fixed appendix, its contents puddle in its lower coils, which in these cases will be found to occupy the true pelvis.

The beginning of the jejunum passes, as we know, upwards and then downward and to the left from the duodeno-jejunal junction. In an individual, the end of whose ileum is obstructed, the heavy coils of the ileum pull upon this junction, causing it to become an acute angle. Nature, in endeavouring to correct this, forms a band at this point which, while primarily beneficial, unfortunately often increases the angulation.

The duodenum, obstructed at its outlet, distends and becomes painful, while its first part, where it is uncovered by peritoneum, frequently shows actual ulceration; in the production of which an ascending infection, of which I shall speak-later, is also a factor.

Nature discovered the principles of gastro-jejunostomy some time before the surgeon, and endeavoured to undo the kink at the duodeno-jejunal junction by forming band fixing the first part of the jejunum to the under surface of the transverse meso-colon.

The obstructed and distended duodenum induces a spasm of the pylorus, and a consequent stasis of the stomach contents. The heavy stomach, as well as the loaded transverse colon, suspended from the greater curvature, exerts a strain upon the stomach at its line of suspension.

This strain is usually felt most on the lesser curvature near the pylorus, and congestion, inflammation, and finally ulceration results.

Now the band which controls the end of the ileum will be found to be attached to the gut at a point opposite to the mesentery, and in contracting, it produces a torsion at the point of attachment, which, super-imposed on the vertical kinking, causes a very real obstruction, often amounting to a 24 hours delay in the passage of a bismuth meal past this point.

This delay favours the invasion of the ileal contents by the colonic flora, as well as an excessive growth of the normal flora of the ileum, and this infection may proceed right up the intestines, often ending in an infection of the ducts which open into the gut, with a subsequent production of cholecystitis, gall stones, pancreatitis, etc.

Such are the purely mechanical effects of intestinal stasis, but even more striking are the effects of the Auto-Intoxication which results from the infected ileal contents. A large group of symptoms, which we are in the habit of calling toxic, develops, and which I shall mention in describing the symptomatology of this condition.

Clinically, cases of intestinal stasis fall more or less naturally into 4 groups, which we may term “the obstructive”, the “toxic or suprarenal,” the “mixed,” and the “end-result” groups.

The “obstructive” type is usually regarded as having a duodenal ulcer, a gastric growth, or what is known as “nervous dyspepsla.”

The patient, complains of pain after food, sometimes at once, sometimes after an interval, with vomiting, which usually relieves the pain.

The vomit consists of the food which has lately been eaten, and is quite different from the vomiting which occurs in the second class of cases.

"Toxic" symptoms may be present but are often not very marked, and it is not for these that the patient seeks advice.

These patients are usually the possessors of apparently thick arteries and have a raised blood-pressure. They usually have quite well developed abdominal muscles.

On examination they are very tender over the duodenum and point to this as the site of their pain. They may may not complain of pain in the iliac fossa, but are invariably extremely tender on pressure in this region, and the end of their ileum is readily palpated as a thick tender cord.

A discriminating x-ray examination shows a firmly fixed point in the ileum, and a dilated and hypertrophied duodenum. The effects of ileo-colostomy on this type of case are most striking. The patient can eat and enjoy solid food, when he has often taken nothing but fluids for months; his blood-pressure falls in a few days to near normal and he can do the hardest and most sustained work with impunity.

At the operations on these cases the ileum is found to be hypertrophied proximal to Lane's kink up to 5 or 6 times its normal thickness, and the duodenum, which may or may not be ulcerated, is also hypertrophied and dis

tended. Bleeding often takes place from this distended duodenum even without any actual ulceration.

In the obstructive group may be placed many of the cases of so-called Hirchsprung's disease occurring in adults, and some cases of chronic volvulus of the sigmoid.

The second group of cases, the "toxic" or "suprarenal type," is the group most commonly recognized. In these people constipation is generally present, and, unless it has led to that condition of irritative diarrhea and paralytic secretion commonly called mucous colitis, is often extreme.

The direct abdominal symptoms, apart from the constipation, are, however, overshadowed by the group of symptoms called toxic, which are usually regarded as being due to the excessive absorption of bacterial toxins.

These symptoms are both subjective and objective, and are often of such intensity as to make the patient- welcome death, since life has become unbearable.

Chief among these symptoms is a condition of mental depression and general misery, which is only increased as measure after measure that promises relief is tried, and the condition grows steadily worse.

This type of case shows as a rule marked pigmentation, a low blood-pressure, cold and clammy hands and feet and marked general asthenia.

Vomiting is practically constant, but differs from the obstructive type in not being related to food and in consisting usually of a watery fluid.

Perspiration is often profuse and foul-smelling, moaning headache is present, the skin is harsh and inelastic, and cystic degeneration of the breast is almost invariably present. Pyorrhea alveolaris is often extensive and adds not a little to the wretched condition of the patient.

Cases of this group may have little abdominal pain, but they are tender over the end of the ileum and over the sigmoid, which is straight and readily palpated.

X-ray examination in these cases may fail to detect an ileal kink, which indeed may be absent on operation, the patient's natural re-active tendency being in abeyance.

This is the extreme picture of this group, but all stages, from an occasional "bilious attack" through the various types of so-called indigestion, neurosis, etc., can be recognized.

The general resistance has been so lowered as the result of intestinal stasis that the body is a ready prey to various infective processes.

Under this head come man cases of tuberculosis, rheumatoid arthritis, etc.

How stasis, and the consequent infection of the intestinal contents, produces the symptoms which I have endeavoured to describe, it appears that four separate factors are at work.

In the first place, there are the purely mechanical effects.

Secondly, there is an excessive absorption of toxines, from the infected alimentary tract.

Thirdly, the abnormal organisms in the ileum may invade the blood stream, inducing various auto-infective conditions; and, fourthly, there is a chemical factor at work which involves the secretions of many, if not all, of the ductless glands.

It appears plain that an internal secretion may be affected in one of two ways: either by disease of the glands producing it or by a deficiency of the precursor from which the secretion is built up.

Animal experiments have shown that the body prefers metabolize its complex constituents from amino-acids rather than from their ultimate breakdown products. These amino-acids are absorbed from the small intestine, and I believe that the infection with the B. coli, which results from stasis, is capable of altering materially the amount and nature of the amino-acids absorb.

Tyrosin, for example, is usually regarded as the precursor of adrenalin.

Now if the infection of stasis produces a deficient absorption of tyrosin, and we know that the B. coli breaks down tyrosin into phenol and cresol, we can easily under stand that a deficient secretion of adrenalin may result.

The pigmentation, low blood-pressure, vomiting, and general asthenia of the toxic group of cases is so strikingly suggestive of Addison's disease (hypoadrenalism) as to make this theory, at any rate, a suggestive one.

I believe that when attention is given to the precursors of the internal secretions, as well as to the glands which build them up, much light will be thrown upon.

Early recognition and proper treatment by an intestinal lubricant, such as liquid paraffin, together with an abdominal support will do much to render operative interference unnecessary. In the presence of a marked Lane's kink and any of the end results of stasis, operative interference is called for and may take the form either of division of the obstructing bands or (and in the majority of cases this will give more satisfactory results) the divided end of the ileum may be implanted into the colon below the last kink.

I hope that I have, at any rate, said enough to indicate to you the lines along which Mr. Lane and those who agree with him are working, and to give you some idea of the many questions connected with the subject of intestinal stasis." - Dr E. G. Schlesinger, MD in "Boston Medical and Surgical Journal", 3 July 1913.

"Dr H. Douglas Wilson: The study of Alimentary Toxaemia is a subject fraught with difficulty at every turn, so complex and of such divergent nature are the problems presented for examination.

Its effects are so varying, and differ so widely in different individuals, that it leads one to the opinion that many atiological factors, especially as to the nature of the offending toxin, must be at work.

It is to the French school and to Bouchard in particular that we owe much for originating lines of thought, investigation and treatment with regard to toxic absorption from the intestinal tract and its allied affections.

While Continental and American writers continually refer to it, English medical literature on the subject is comparatively meagre, although, thanks largely to the stimulating influence of Mr. Arbuthnot Lane, it would appear to be about to receive the adequate and widespread attention which is certainly its due.

Of the alimentary tract as a whole, one would naturally suppose that the part most likely to produce toxic effects of more than a passing nature, such as might be described as chronic constitutional disturbance, is the lower digestive apparatus, and the colon in particular.

Here are prone to occur conditions such as intestinal stasis which encourage the growth and propagation of flora, the effects of which may well give rise to many symptoms. **What I have to say is based on the results of observation and treatment of some 800 cases, in which I believed the colon was the seat of toxic absorption, and which have passed through my hands at Harrogate during the past 9 years. Practically all were treated by Colon Irrigations of mineral water in combination with other spa methods.**

There can be no question that constipation, or at all events inefficient evacuation of the large bowel, is present in the vast majority of cases, though not in all.

All one's experience goes to show that in these very cases where efficient clearance is necessary and essential for the alleviation of symptoms it is most difficult to obtain by ordinary laxatives.

This is frequently easy enough to prove by administering Colon Irrigations after a previous course of laxatives, when they often show old hard scybalae, mucus, and retained faeces.

The explanation seems to lie in the fact that very many of these subjects have a spastic state of the sigmoid which is made more irritable by laxatives, and it seems to stop further evacuation after a certain amount of material has been allowed to pass.

Another symptom common to cases of chronic auto-intoxication is the slack state of the abdominal walls.

This may exist to a marked degree in patients otherwise of excellent muscular condition and development, and its disappearance is synchronous with improvement in the state of the bowel and the general condition of the sufferer.

Here, I believe, may be the starting point of the many stages of visceral ptosis into which patients in most instances should not be allowed to drift if taken in hand at a sufficiently early stage and appropriately treated.

No doubt there seems to be an intimate association between colon toxaemia and floating kidney. The former, in addition to its malign influence on abdominal muscles, seems to have ill-effects on the supporting structures of the internal organs, and the symptoms which have by some writers been ascribed to undue renal mobility might, more often than not, be said to be toxic in origin.

The effect of toxic absorption from the lower alimentary canal on the rest of the digestive apparatus may be profound. Functions of the stomach, liver, and pancreas may be much disturbed. Various forms of dyspepsia seem to be secondary to it, and prove most intractable as to treatment unless the originating cause is first attended to.

It is no unusual thing for these patients to pass pale stools, the want of colour, being due to a deficient amount of bile, or to undigested fat.

If the former exists cholagogues have little effect, and help is best and most quickly obtained by Colon Irrigations.

The stools of those suffering from lower bowel toxaemia frequently show mucus in excess of the normal, but this is by no means a constant factor.

It may vary greatly in amount and character, even in the same individual, and is often only revealed in colon washings.

Certain types of patient state that they feel better in themselves when they note its presence, and its apparent disappearance may be accompanied by a recrudescence of symptoms.

The nervous system is particularly prone to be affected in some way by toxic absorption from the colon.

It is very remarkable how rare it is to find the complaint in patients of a phlegmatic or bucolic temperament, and it seems to be a fertile source of neurasthenia and high-strung nerves. Too frequently are neurasthenic patients subjected to “rest cures”, and the usual routine treatment of such cases, without first having a thorough overhaul of their digestive apparatus.

It is rare, too, to find the subjects of colon intoxication without nerve symptoms of some sort or kind.

Commonly enough these may be of minor degree, but none the less distressing. Such patients often complain of depression and irritability; trifles worry them; they have difficulties in mental concentration, and as to memory.

They lose their sense of well-being, are often restless, and are apt to get morbidly introspective. It is a not uncommon cause of insomnia, and one which should be more widely recognized, as it often escapes the attention of the medical attendant. Nerve symptoms, however, may be of great severity. For example, I have seen success follow treatment of the colon in intractable hemicrania of many

years standing, where previously all ordinary treatment had failed, and the patient had had to be given morphia, under medical advice, for attacks of increasing intensity and frequency.

Acute neuralgias, and some forms of neuritis, are associated with it, and I have found it the cause in several instances of tender scalp.

Da Costa, writing in 1871, recognized the importance of inquiring as to the state of the large bowel in cases of anomalous nervous disease; and were this more frequently borne in mind much benefit would accrue to individual sufferers.

The effects of colon auto-intoxication on the circulation differ in the same way as the trouble produces different symptoms in different subjects.

In some cases blood-pressure is abnormally low-this is often found to be so where there is marked mental depression.

On the other hand, it would seem that in many instances it is a source of abnormally high pressure.

Tachycardia or bradycardia may exist, or the pulse may exhibit marked irregularity in time and force.

Poor circulation, as is evidenced by coldness of the extremities, is common, and is a very frequent symptom.

I have seen it associated in more than one case with Raynaud's disease.

Diseases of the locomotor system not uncommonly find their origin in chronic intestinal auto-intoxication.

It is a more than probable cause in some cases of rheumatoid arthritis, one of prime importance in gout, especially of the acute type.

In quite a number of cases I have seen efficient lavage of the colon cut short an attack of this disease where previously all the more usual methods of treatment had failed to bring or maintain relief.

Fibrositis, too, may find its origin in absorption of toxin from the digestive apparatus, and it is now recognized by many authorities as a direct cause of this painful and troublesome affection.

The state of the skin in these chronic toxic cases is often peculiarly dry and harsh. Affections such as some forms of eczema, psoriasis, and chronic urticaria may arise from a similar cause.

I have seen success follow treatment of the colon in obstinate conditions of herpes and dermatitis herpetiformis and also of septic state of the nails.

As to Treatment

Diet is of the greatest importance, and must be suited to the peculiar needs of the individual. Speaking broadly, it would appear necessary to consider it as much from a mechanical as from a chemical standpoint. Foodstuffs calculated to leave a residue of undigested particles are apt to set up further colon irritability, and in the many cases where a tendency to spasm exists this can be a source of further trouble. Food must be masticated thoroughly, and eaten slowly.

Meals should be “dry” and large quantities of fluid taken between meals.

In Conclusion

I would most strongly urge the utmost importance of routine, thorough examination of the abdomen in all cases where there can be a possible doubt as to the origin of symptoms however remotely removed from that region.

Too often such a thing begins and ends with an inquiry as to the state of the bowels.

In cases where there can still be a doubt, and these are frequently enough met with, lavage of the colon may clear up a diagnosis.

In regard to intestinal irrigations, my own experience has been almost wholly confined to those in which the Harrogate sulphur waters have been used as an irrigant, but in some instances where this was not available I have recommended normal saline solution.

The fluid employed must be bland in type, and of proper temperature and pressure. The use of antiseptic solutions as a method of treatment is to be deprecated, as their prolonged administration is frequently attended by disastrous results owing to their tendency to produce further irritation." - in "Proceedings of the Royal Society of Medicine", 1913.

"I merely want to give an experience I had about a year ago with a patient.

A young man, 32 years of age, was brought to me by one of my colleagues.

He had become a nervous wreck; he was unable to follow any employment, and after examination I decided that his trouble was due to a toxaemia brought about by intestinal stasis entirely.

He was suffering from obstinate constipation and his nervous system was very much shattered. He had frequent epileptic convulsions, which he had acquired several years before. A series of x-ray pictures showed a very greatly distended caecum, with prolapse into the pelvis, and after careful consideration we decided to endeavour to relieve him by one of the operations for intestinal stasis.

The operation we did was an ileosigmoidostomy, and with my limited experience with this operation the results have been remarkable. This young man had 2 convulsions while he was still in the hospital. This was 10 months ago.

He was discharged the 14th day, and since his discharge he has steadily improved. He has had no further convulsive attacks.

He has increased in weight and in general health and is now holding a very important position and doing all his work satisfactorily.

I want merely to emphasize the satisfactory end result in this particular case.

I have had but 2 of these cases, but I am so well satisfied with the results in this case that I thought it might be of interest to report them here.

It seems to me that the epileptic or epileptiform convulsions from which he suffered were, in all probability, due to the effect of toxic absorption from his intestinal canal." - Dr. John W. Poucher, MD, Poughkeepsie, New York in "Transactions of the American Association of Obstetricians and Gynecologists", 1915.

"It seems to me that it is an odd fact that the human race only has intestinal stasis; apparently neither wild beasts nor domestic animals are affected by that disorder.

I imagine that before we know what are the real causes of intestinal stasis we shall have to consider the relation to its causation of a far larger number of organs than at present we consider in that connection.

One suggestion that occurs to me is the possible relation of the adrenals to intestinal stasis.

We know that adrenalin inhibits contractions of the intestinal muscles.

We know that the adrenal glands put out an increased amount of adrenalin in response to emotion, to worry, to fear, to anger, and that an increased output of adrenalin is produced by all infections and by indol and skatol.

The specific action of adrenalin being inhibition of the activity of the intestinal muscles any one of these agents may prove to be the causative factor in a given case of intestinal stasis." - Dr. George W. Crile, MD in "Transactions of the American Association of Obstetricians and Gynecologists", 1915.

Intestinal Stasis in Relation to Cancer Aetiology and Prophylaxis

"The future study of the prophylaxis of cancer will probably be more and more largely concerned with the systemic prevention of the disease. One of the most interesting, and perhaps most hopeful, theories recently proposed in this connection is that of W. Arbuthnot Lane, surgeon to Guy's Hospital, London, based upon chronic intestinal stasis and its treatment.

In 1901 Mr. Lane performed the first of a series of operations for the relief of chronic intestinal stasis and the checkmating, so to speak, of the various ills contingent upon this condition.

From his study of the subject, he reached the conclusion that: It would be impossible for a person to become affected by Tuberculosis or by Rheumatoid Arthritis unless the resisting power of the individual to the entry of organisms has been depreciated by Auto-Intoxication consequent on the presence of Intestinal Stasis.

So, likewise, he became convinced that the degenerative condition of the female breast which manifests itself in induration, cystic change, etc., is a barometer of the degree of stasis.

> ***"I have no doubt whatever, that these degenerated breasts are very liable to develop cancer. I have found multiple foci of cancer in such degenerated breasts in cases of Chronic Intestinal Stasis*** *in which there was no reason whatever to suspect their presence." - Sir Arbuthnot Lane*

Cancer of the stomach and intestine, and of the biliary ducts and pancreas, he traces in like manner to Chronic Intestinal Stasis.

It should be borne in mind in all cases of chronic constipation, auto-intoxication, and other obscure conditions seemingly having their origin in defective function of some portion of the gastro-intestinal tract.

The study of the subject from the point of view of the "end results", as Lane calls them, **leads naturally to an investigation of the conditions giving rise to intestinal stasis and its concomitant affections**, and to the manner of dealing with these conditions.

According to Lane, the weight of the abdominal viscera tends to cause, in the upright position, a ptosis of the heavier parts of the alimentary canal, notably, the stomach, when it is filled with food, and the large interests, when it is loaded with faeces.

With the dropping of the viscera there is dragging upon the mesentery, resulting in the formation of thickened bands, sometimes referred to as "evolutionary adhesions", the function of which seems to be to support the intestines and to prevent them from dropping downward.

The unequal strength of these bands in different parts leads to unequal support throughout, and as a consequence the bowel is held up firmly in some points and allowed to sag in others, the result being angulation or kinking at the point of support.

The perfectly natural outcome of this condition of affairs is obstruction to the lumen of the intestine at the point of the kink, with damming back of the contents, and general slowing of the drainage of the canal.

Reabsorption and autointoxication are the inevitable results, leading, in Lane's opinion, to a general lowering of the resistance of the body and the concomitant increase of susceptibility to various diseases, including cancer.

The points of predilection for the formation of these kinks are:

1. in the third part of the duodenum, at the commencement of the jejunum:
2. at different points along the terminal coil of the ileum, "Lane's Ileal Kink":
3. in the ileo-cecal region, including the appendix;
4. in the region of the hepatic flexure and the first part of the transverse colon:
5. at the splenic flexure;
6. at the sigmoid loop;
7. in the rectum.

The degree of obstruction has been carefully studied by Mr. Lane, with the aid of the excellent radiographic work of Dr Alfred C. Jordan, medical radiographer to Guy's Hospital.

The rapidity of the passage of bismuth through the intestinal canal has been accurately studied. It has been found that the obstruction varies widely, from a

slight degree, which is easily corrected by abdominal supports, to a greater degree, which may require laparotomy, with division of the bands and correction of the angulation, ileo-colostomy, etc., and on to the more severe degrees, necessitating radical treatment, such as colectomy.

Since my attention was first directed to Lane's work I have borne these "kinks" in mind in all laparotomies, and have made an especial study of the question in cases in which the symptomatology pointed particularly to intestinal stasis resulting from the conditions described by Lane.

The findings in many cases have verified his contention? with reference to the presence of "kinks."

Special study is being carried on with reference to the probable **influence of intestinal stasis in the causation of cancer."** - Dr William Seaman Bainbridge. Sc.D., MD, New York in "journal of the Medical Society of New York", July 1912.

Intestinal Stasis in the Causation of Cancer

*"**Chronic ulcers tend to become cancerous,** and in several cases I can show the actual transition from simple chronic ulcer to carcinoma of the stomach. Thus we have a further instance of **the importance of Intestinal Stasis in the causation of Cancer. The distended duodenum is evidence of Intestinal Stasis, and the ileum, and large intestine in all cases afford confirmatory evidence of stasis;** moreover, the clinical examination of the patients shows them to be suffering from intestinal toxaemia. In many subjects of intestinal stasis I find marked radiographic evidence of atheroma of the aorta at an unusually early age-another instance of **the havoc wrought on the tissues by the intestinal poisons."** - Dr Alfred C. Jordan, MD in "Proceedings of the Royal Society of Medicine", 1913.*

Chronic Intestinal Stasis

"Sir Arbuthnot Lane, of London, defined chronic intestinal stasis as follows:

"By chronic intestinal stasis I mean that the passage of food along the alimentary canal takes place with such slowness that there is formed an excess of toxic matter, especially in the small intestine. Consequently, the blood flow pours into the transforming and excretory organs a quantity of poison larger than they can eliminate. From this it results that all the tissues of the body, drenched in this blood rich in poisons, degenerate and offer a diminished resistance to infection. A defective drainage has consequences which are deleterious to the organism in general as well as to the individual tissues of which it is composed."

Accepting this definition as Sir Arbuthnot Lane has given it, we have practically a question of body drainage to consider.

The body, in its last analysis, may be compared to a hollow cylinder, with an inner tube which is twisted, normally, in its development, some parts being dilated, others contracted, while some side passages are enlarged into great organs, which, by developing as diverticula, are still patulous and empty into the one central tube. **In other words, this great central canal, the gastro-intestinal tract, with its side passages leading to reservoirs which we call organs, may be compared with a great drainage or sewage system.**

Obstruction and retention in one part of the sewage system means, sooner or later, contamination of the entire area drained by those canals. So with the body, when there is abnormal retention in one part the entire system, sooner or later, becomes contaminated.

For, in the body, there are present just the conditions, warmth, moisture, and bacteria, which favour the development of toxic materials.

If for any reason, therefore, there is a slowing of the passage of the contents of the great body sewage system, there is not only a greater development of toxic matter than in normal circumstances, but the absorption of more poisonous material, and the bathing of the tissues with it. The parts thus affected suffer, in time. **Disturbed function, disease, and even death, may result.**

Just as the sewage system of a great city is kept in proper working order by inspection and care in order to prevent obstruction or breaks, so the body drainage system should be subjected to surveillance, and the far reaching results of retention and tissue contamination prevented.

The prevention of chronic intestinal stasis and its aftermath of disturbed function, disease, and death, is our prime object in the study of this subject.

The vast majority of cases should have been prevented.

Hygienic and medical treatment will cure a large proportion of cases if instituted in the beginning. Certainly 9 out of 10, and possibly 19 out of 20 of all cases should not reach the stage which calls for surgical intervention.

When the subject is in the prone position, as on the operating table, these kinks (Lane's Kinks) and angulations may not be apparent.

When in the upright posture, as when standing, or in the reverse Trendelenburg position on the table, or if the organs are carefully held up, the constricting bands and the resulting kinks become far more apparent.

This mechanical fact perhaps explains the difficulty experienced by many surgeons in "seeing the kinks."

Added experience, however, with these changes of position borne in mind, has practically eliminated the former doubt concerning the existence of these "crystallizations of lines of strain", as Lane has called them, and the resultant slowing of the passage of the contents of the great drainage system of the body.

Just howl far the admirable pioneer work of Lane in the study of chronic intestinal stasis will lead us, time and further study must determine.

We no longer question the far reaching relationship of chronic intestinal stasis to many conditions which were formerly considered distinct disease entities.

Lane, as is well known, has repeatedly emphasized a series of affections brought about by the enfeebled resistance which the tissues offer to the invasion of microbes.

Among these may be mentioned here:

1. Pyorrhoea Alveolaris;
2. Tuberculosis;
3. Rheumatoid Arthritis;
4. Thyroid Adenoma or general Hypertrophy, or even Exophthalmic Goitre;
5. Still's disease (Polyarthritis, marked by enlargement of the lymph nodes);
6. Infections of a purulent nature in the Skin;
7. Ulcerating Endocarditis, and many other affections.

It may be predicted that many skin diseases, notably Psoriasis, are initiated or rendered more severe and persistent by chronic intestinal stasis.

The mental depression of stasis patients has been so uniformly noted, that the question arises as to how far many of the milder forms of mental derangement, epilepsy, criminal insanities, etc., may be influenced by the interference with normal body drainage.

Intestinal stasis presents a wide field for research; at the same time it opens the door of hope for many a person who would otherwise be considered as doomed to chronic invalidism." - Dr William Seaman Bainbridge, AM, Sc.D., MD in "New York Medical Journal", 24 January 1914.

Operative Findings in Twelve Cases of Chronic Intestinal Stasis

Chronic Intestinal Stasis and its Treatment, the establishment of the facts of the existence of the adventitious intra-abdominal structures, to some of which Lane has been calling attention since 1887

The "Veils", "Bands", "Folds", and "Membranes"

"Internists and gastroenterologists, as a rule, direct their attention largely to the treatment of these conditions by non-surgical means.

The surgeons reserve the right, as occasion seems to demand, to resort to operative procedures, such as cutting and suturing bands, short-circuiting, colectomy, or other surgical measures.

Some have not joined the ranks of the optimists, but still register among the pessimists. They are busy discovering flaws in Lane's line of reasoning; in detecting the impossible in his pathology; in condemning him to the category of the hopeless hobbyist.

They see in his propensity for exploring new fields, the danger of riding his horse to death, as a distinguished pathologist has expressed it.

They have conjured up night-mares in the form of "small minds and untrained", "immature surgeons of two continents", who, following these "phantasms of a disordered imagination", are apt to "inaugurate an era of short-circuiting, performing this or the yet graver colectomy for all sorts and conditions of disease in all sorts and conditions of men, women, and children, on the smallest possible pretext."

Lane himself, referring to the attitude of some of his confers, says:

> ***"When I first began to draw the attention of the profession to the great part played in the life history of the individual by a delay in the passage of material along the alimentary tract, and drew a parallel between the human digestive canal and a drainage system,*** *my observations were treated as being the fantasies of a vivid imagination. Later, when the accuracy of these observations was being tested in the field of hard fact, the more progressive observers began to realize that my premises were not so fanciful as had at first been supposed. Now, the subject of chronic intestinal stasis, and its disastrous sequelae, is occupying the attention of the profession more and more completely every year."*

Thus, for 8 Years and More

I have studied the subject of chronic intestinal stasis from many points of view, not forgetting the far larger group of patients who should never be compelled to have recourse to surgical intervention.

I have endeavoured to maintain the spirit of open-mindedness, believing that there is here a great field for investigation and a reasonable hope of doing lasting good to many by means of both non-surgical and surgical treatment.

It is important, it seems to me, to study the human digestive canal as a great drainage system, the human body, if you please, as a house, and the digestive system as the drainage plant of the house.

It is important, too, to consider this system as a whole, remembering that defects in one or more parts are apt to derange the whole plant.

It is well to study the matter by beginning in the cellar, so to speak, the rectum, as would a plumber in looking for defects in the plumbing system of a house, and to work up to the attic, the stomach, then to reverse the order and to work from above downward.

By following this method of study I have been able to find the adventitious structures in the abdomen, to which Lane has so persistently called attention, and which he has so clearly described.

I have also been able to demonstrate to my own satisfaction, and to the conviction of assistants and many who have witnessed the operations, the kinks in the intestine which these bands cause, and the resulting dilatation of the involved portions of the drainage canal.

The diagnosis thus established at operation, has been confirmed, in a large proportion of cases, by the improved condition of the patient after surgical treatment. So many observers have verified the existence of the bands, which have come, without his will, to be known as "Lane's bands", and the resulting kinks, which many are accustomed to designate as "Lane's kinks".

The splendid work of Alfred C. Jordan, of London, and others, in this particular phase of radiographic work, is certainly monumental.

The symptoms of chronic intestinal stasis are those which result from mechanical changes in the drainage tube.

We must take for granted, for purposes of discussion, that Lane's theory with reference to these changes is correct.

What, then, are the clinical symptoms in a typical case of chronic intestinal stasis?

They may be enumerated in the following order:

1. Pain or discomfort, usually referred to the region of the duodenum and stomach, but also to portions of the large intestine.

2. Gastric discomfort, nausea and occasional vomiting, resulting from obstruction to the outlet of the stomach in consequence of ulcer or cicatrization of the pylorus or duodenum, or constricting bands about the duodenum in the neighbourhood of the pylorus. These symptoms may be classed under the ordinary category of "indigestion."

3. Various symptoms which may be catalogued under the term "autointoxication", which Lane has described as "flooding the liver with a quantity of toxic material picked up from the stomach, duodenum, and small intestine, in excess of what the liver, kidneys, and skin are able to deal with."

These vary according to the susceptibility of the individual.

Under this head may be grouped a most important set of individual symptoms and physical signs, such as the blotchy appearance of the skin, which is cold and clammy, especially over the extremities; the cold perspiration, of an offensive odour; the loss of fat; the lumpy condition of the breast; thyroidismus, in some cases; tenderness over the ileum; mental torpor - **in fact, the entire symtomatology usually described under autointoxication: Headache, melancholia, inability to sleep, or sleep disturbed by unpleasant dreams, also come under this general classification of symptoms.**

4. Constipation, or, as is sometimes the case, persistent diarrhoea.

Verification of Clinical Diagnosis by Operation

Case XII. — R. C., female, aged 42. Operation, 8 June 1913. Operative Findings. — Distinct ileopelvic bands; ileum dilated. Gall-stones; beginning cancer of liver in neighbourhood of where gallstones pressed upon liver.

Remote Effects of Chronic Intestinal Stasis

In addition to the usual symptoms as observed in a fairly typical case, Lane has called attention to a series of symptoms and diseases the outcome of chronic intestinal stasis, and which have been called the end-results.

He has enumerated a rather comprehensive list of diseases to be trace able to chronic intestinal stasis, or to the lowered resistance which results therefrom, among which may be mentioned, rheumatoid arthritis, tuberculosis, goitre and cancer. It is to the last-named disease that I wish to direct especial attention in this connection. The interrelationship, how ever, of ulcers of the gastrointestinal tract and cancer of this region of chronic irritation, as shown in Case XII, and cancer, and of these conditions with chronic intestinal stasis, furnishes food for thought.

The last 3 cases of the series presented seem to me to be significant in the light of some of the possible end-results of stasis.

In this connection I may conclude with a recent statement by Lane:

> *"If the views I hold on the subject are even approximately correct, no bigger question has ever held the attention of the medical profession. It has to do with the ground-work of disease and deals with primary causes, a matter of the greatest moment to us in the explanation of the factors that produce changes in our several tissues, which changes we call diseases, and in the knowledge of the manner in which we can either obviate their development, or alleviate or remove them if they have already developed."*

Dr. David Hadden, Oakland, California:

> *"A woman, about 45 years, was brought into his clinic for the purpose of removing her colon. Preceding the operation, as he always does, with an investigation or examination of all the other abdominal viscera, he found the gall-bladder full of gall stones, so much so that this organ could be seen by all who had a view of the abdominal wound. Mr. Lane had the gall-bladder in his hand, showed it to his visitors and told them it was filled with gall-stones. He said, "I will not bother about these gall-stones. I will simply remove this patient's colon. The gall-stones will take care of themselves." He did just what he said."*

Dr. William Seaman Bainbridge - Concerning constipation; there may be a certain amount of residual faeces, just as there is of residual urine.

There may be kinks without stasis, and there may be stasis without kinks.

There may be stasis with constipation, there may be diarrhoea with stasis, and there may be diarrhoea and constipation at the same time.

Referring to Dr. Zinke's remarks, I have no doubt that Lane has gone too far in what he said. If he has gone too far it is because he has been leading the way.

I have heard him say that he does not know where it will all lead us, and that as

an initiator if he does not somewhat overstate things the profession will not listen, and humanity will not have the great benefit which this question seems to offer.

Perhaps 19 out of 20 patients with stasis should never have operative treatment.

The great truth which Lane has brought to us is the consideration of human drainage—the plumbing of the house in which we live — as essential to health and as an active factor in a large number of human ills.

He has opened the door of hope to many a human wreck, and has laid down a plan for the prevention of much disease and misery." - Dr William Seaman Bainbridge, MD, Professor of Surgery, New York Polyclinic Medical School and Hospital in "The American Journal of Obstetrics and Diseases of Woman and Children", Vol.71, 1915.

> ***"By curing constipation and the morbid disposition of the bowels which causes it, all diseases in general disappear of themselves in a short time, and even in cases where, previously, they had resisted every method of cure which seemed more direct."*** *- in "Obstinate, Inveterate, and Habitual Constipation", 1846.*

Bowel Stagnation

"The entire alimentary canal is a very delicate structure along which vital changes in food, commencing at the mouth, take place, and therefore nothing objectionable should be permitted to enter lest such substances injure the mucous membranes that line the digestive tract.

The effects of a stagnant colon are only too patent to the observer; irritability, dullness, and discomfort in the abdomen are but minor details.

And when the condition has persisted for some time, the whole system becomes more or less poisoned.

The patient is said to be suffering from Autotoxemia.

This self-poisoning is brought about by the putrescent matter which is absorbed through the walls of the bowels and thus passed into the blood-stream itself. The nourishment carried to the millions of cells is therefore vitiated, and so the victims of constipation become grey, sallow, and scraggy.

They have no true appetite; they suffer from headaches, and even from mental disturbances through intestinal stagnation.

On this subject, Sir W. Arbuthnot Lane, stated that:

> ***"Imperfect bowel functioning is responsible for the existence of the Gynaecologist".***

Get rid of constipation, and a host of illnesses will vanish." - Clement Jeffery, MA, in "Positive Health Without Knife or Drugs", 1928.

Costiveness

"Costiveness (constipation) induces the feculent odour of the breath, disordered stomach, depraved appetite, and impaired digestion.

These preclude a sufficient supply of nourishment; hence paleness, laxity, flaccidity, nervous symptoms, wasting of the muscular flesh, languor, debility, retention of the menses, suspension of other excretions, serous effusions, dropsy, and death.

Edinburgh, October 1805: A young woman of a delicate constitution, but not liable to general bad health, was seized with frequent violent and bound cough, unattended with pain of breast, dyspnoea, quickness of pulse, or heat of surface.

The experience of the effect of some purgative medicines, which had been given in the course of the disease, proved that the patient was either of a peculiarly constipated habit of body, or laboured under temporary constipation.

The appearance and odour of the faeces evinced their morbid state; while the quantity that was dislodged proved that the feculent accumulation had been great.

And there was no doubt of these circumstances having been the cause of the ailment, for the cessation of the cough, and the progress of convalescence kept pace with the gradual unloading of the bowels.

Our patient was so satisfied of this, that she readily agreed to follow out a course of purgative medicines, in order to preserve her bowels in a regular state of daily and full evacuation.

I am disposed to refer the superior utility of purgative medicines in typhus fever to the circumstance of their operating throughout the whole extent of the intestinal canal; to their acting upon an organ, the healthy functions of which are essential to recovery, in a manner that is consonant to the course of nature, by propelling its contents from above downwards; and to their moving, and completely evacuating, the feculent matter which, in this case, becomes offensive and irritating.

Constipation, together with the change which fever appears to produce in the fluids secreted into the intestines, seems to be the cause of this alteration in the state of the faeces. The necessity of expelling this noxious mass is therefore apparent.

In marasmus I am more disposed to think that a torpid state, or weakened action of the alimentary canal, is the immediate cause of the disease; whence proceed costiveness, distension of the bowels, and a peculiar irritation, the consequence of remora of the faeces." - Dr James Hamilton, MD in "Observations on the Utility and Administration of Purgative Medicines in Several Diseases", 1818.

> *"There is nothing paradoxical in the assertion that the slightest perturbation in the digestive functions produces disorders in all the others; this is, above all, rigorously correct with respect to the viscera contained in the abdomen. When digestion is badly performed*

it produces bad chyle; the repairing fluids no longer distribute the pabulum of life through every part of the frame, and the machine soon becomes deranged. It may therefore be most truly affirmed that digestion is the basis of human health, and that we often deceive ourselves when we can perceive nothing but a solitary fact in the affection of an organ apparently unconnected with the digestive passages. It has often happened to me to answer applications for advice in cases of chronic diseases of the heart, lungs, etc., by questions calculated to enlighten me on the state of the digestive organs; and to discover from the answers, that what were supposed to be essential or organic affections of such-and-such viscera proceeded solely from derangement of the digestive apparatus." - Dr Bésuchet de Saunois, MD, in "Gastritis, and the Nervous Affections, Chronic Affections of the Viscera", page 79, 1843.

"If the evacuations were neglected, the sick fell into continuous fevers, and also became yellow only in jaundice; that neutral salts were useful to produce a regular intermission; that emetics who produced stools were the most useful, and healed were sick often without help." - Sir John Pringle in "Diseases of the Army".

"If evacuations were either neglected, or too sparingly used, the patient fell into a continued fever, and sometimes grew yellow as in a jaundice." - in "The Edinburgh Practice of Physic and Surgery", 1800.

Constipation the Cause of Many Complicated Diseases

"Impacted faeces has destroyed the life and happiness of more innocent persons than perhaps any other acquired habit incident to the human family.

It is a scientific fact, that when food is taken into the mouth, it is submitted to the mechanical action of the teeth and the simultaneous chemical action of the salivary glands, thus preparing it for the continued chemical action that takes place when it comes in contact with the gastric juices of the stomach; this fermentation is called digestion, which is aided by the secretions of other appropriate glands; when the food is thus fermented, it is called chyme, when it passes the duodenum into the small intestines, it there meets with the secretions of other appropriate glands which changes its character into a chemical compound known as chyle.

The mucous membrane of the alimentary canal is covered with an immensity of lacteals or absorbents, from esophagus to rectum.

The nutriment is absorbed through these lacteals, which lacteals gradually diverge in to one common trunk, known as the thoracic duct; through this duct the nutriment, both hystogenetic and calorifacient, is curried to the liver for

depuration, while the excrement is left in the alimentary canal to be thrown off according to the laws of health.

When this excrement is pent up in rectum and colon for days, it certainly undergoes decomposition and absorption that is averse to the laws of health.

I will illustrate for example: The dead animal when exposed to heat and air soon decomposes; when this putrefaction is inoculated into the human system it is destructive to human life.

May we not conclude that the absorption of de composed excrementitious matter through the lacteals or absorbents of the alimentary canal would, in like manner, destroy or greatly impair the health – giving germs of the pabulum of life? To my mind this is a rational conclusion.

May we not conclude that the secretions, and excretions of the liver, the great depurator of the blood, together with all the glandular system, are greatly interfered with?

May we not conclude that the functions of the liver are impaired by blood-poisoning, and that torpor of the liver is the primary cause of all the concomitant evils that attend constipated bowels?

To wit:

1. Indigestion.
2. Vertigo.
3. Dizziness.
4. Dull Pain across the Brain and between the Shoulders.
5. Mental Dullness.
6. Lethargy.
7. Palpitation of the Heart.
8. Cold Feet and Hands.
9. Imperfect Circulation of the Blood.
10. Hysteria.
11. Great Anxiety.
12. Want of Energy.
13. Dark forebodings of approaching Despair.
14. Death, etc.

Again, is it not reasonable, that the irritation and congestion that is set up in the lower bowel by impacted faeces is the primary cause of nearly all the uterine troubles that are accumulating upon the females of the nineteenth century?

Our American women seem to be much more susceptible to the habit of constipation than are men.

False modesty is the original cause of many ignorant females dragging through a miserable existence with uterine and anal troubles.

The ladies of the rural districts are too busy performing their domestic duties to obey the laws of health when nature demands it; the call of nature is therefore postponed until a more convenient season; but, alas, the disposition or inclination to move the bowels passes away before the task is performed or before the company leaves.

The society ladies dare not inflict the breach of etiquette upon their associates to obey the laws of health; but before her task is performed, or before her fashionable associates bid her adieu the inclination to evacuate the bowels has passed away; the habit of this unsuspected monster (constipation), is soon established and its concomitant evils set up, as set forth in this article, are the awful results - as inflammation of the uterus, prolapsus uteri, both suppressed and profuse menstruation, difficult micturition, neuralgia of uterus, kidneys, bladder and rectum, with all their fluctuations and changes, prolapsus ani, haemorrhoids, fissures in ano, painful evacuation of faeces, hemorrhages, flu or albus, etc.

I appeal to the contributors and patrons of the Medical Brief for the correctness of my theory, and, if correct, would it be empirical for our profession to undertake to educate the masses and thereby ameliorate the suffering of our noble Americans.

In conclusion, I would say that I have an experience of 35 years at the bedside.

Treatment, Remedies, Hygiene for Constipation and The Concomitant Evils of Impacted Faeces

I desire to make myself legible to the most obtuse of the profession.

I therefore "come not with excellency of speech or of wisdom", but to testify to that which I know both from experience and observation.

About 3 out of 4 of the old standing chronic cases that I am called upon to treat, will answer the following questions in the affirmative:

Are you troubled with indigestion? vertigo? dizziness? pain across the brow? dull pain between the shoulders? mental dullness? lethargy? palpitation of the heart? cold feet and hands? melancholy? great anxiety? want of energy? dark forebodings? uterine troubles? haemorrhoids? etc., all of which can be traced to impacted faeces and neglected hygiene.

In my early life, I refused to embrace the old dogma, "Alias Pathos", as a medical motto, but wedded to another medical motto that to my mind was more rational:

"Remove causes and effects will cease", has been my sheet anchor for 35 years.

To remove the cause of constipation, I attempt to educate the patient as to the primary cause of all her or his suffering, as the case may be.

I instruct them to adopt or go back to the habits of child hood, and never again to allow the bowels to linger a day without evacuation.

Should they refuse to act, I instruct the patient to flush the colon with warm water, and repeat until the desired end is accomplished.

I instruct them to do this at a certain hour in each day until the habit is fully established, and that nature will then force a compliance. I also educate them in diet, by telling them how, when and which, etc.

To purify the blood, remove the torpor of liver, establish digestion, clear up the urine, I elect from the following such as I think will best meet the indication.

If the liver is obstinate. To remove uterine troubles, I resort to hot douches, astringent washes, sponges, pledgets of lint, disinfectants, supporters, etc." - Dr S. M. Carlton, MD, in "The Medical Brief", Vol. 19, 1891.

"Most disturbances of function in the digestive tract are due to stasis, with the production of epigastric distress, nausea, loss of appetite, belching of gas and, in some cases, delay in emptying the stomach and also duodenal spasm.

When stasis is present, as it is in all cases of disturbances in the gastro-intestinal tract, absorption of bacteria and toxins into the portal circulation and the haemorrhoidal veins follows.

That these bacteria and toxins do escape into the circulation has been shown by Nedzel and Arnold in "Proceedings of the Society of Experimental Biologists" 1931, John B. Deaver in "Hepatitis", JAMA, April 1931 and E. S. Judd in "Cholangitis", Journal Michigan State 1930, V. C. David and E. C. McGill, in "Journal of Urology" September 1923, reporting on the observations of 55 investigators, said that, in dogs at autopsy, 50% showed Colon Bacilli in the mesenteric glands.

L. R. Braithwaite in "British Journal of Surgery" 1923, suggests that these toxins and bacteria are carried along the superior mesenteric nodes to those in the lumbar region, thence through the receptaculum chyli to the pyloric region, producing one of the causes of ulcer.

Again, you will recall that Moyniham, in his elaborate work on ulcer, speaks pointedly of the relation of the caecum and duodenum." - Dr Frank Anthony Cummings, MD in "The Colon as a Focus of Infection", The Rhode Island Medical Journal, 1934.

Pathological Causes of Constipation

"The pathological causes of constipation, when organic, and when such as narrow the lumen of the bowel, are apt, in their extremer developments, to determine intestinal occlusion.

Coprostasis is a good old name for faecal stagnation. Habitual constipation is more or less imperfect faecal stagnation between the caecum and the anus.

What is the Human Faex (waste matter)?

This is a question very pertinent to our purpose.

Let us answer it briefly, and strictly to illuminate the therapeutic issues of the subject.

Our usual general idea is that a healthy human faex is a pasty mass made up of insoluble and superfluous food, mixed with intestinal mucus, pancreatic and other glandular secretions, and moulded into a sausage-shaped form in the large intestine, with numerous secondary convexities marking the concavities of that tube. We are apt to forget that there is much evidence that faeces, besides being all that I have just stated, are, in an important physiological sense, in an important pathological sense, and in an important therapeutic sense, much more - namely, in part an excretion formed by secretion.

If we recognise that faeces are in part a secretion from the blood of noxious excretory products of life and activity, the elimination of which is essential to health, and the non-elimination of which causes various sufferings, we shall understand that the therapeutics of constipation is much more important than it would seem to be, if we do not include this secretory view of the faeces in our consideration.

> *"It was some time ago supposed by many that the faeces consisted simply of those parts of the food which remained unabsorbed, and that all purgative medicines alike acted by exciting the peristaltic motion of the bowels, and causing thus the ejection of these undigested matters. Such an opinion is now rarely maintained. Although very little is known of the separate functions of the glands of the intestinal mucous membrane, yet it is generally supposed that the faecal matters consist in great part of excrementitious substances which are separated by their means from the blood. The excretion of faeces continues when no food is taken. It is known to go on with starving men, and with patients in fever. Liebig argues for the secretion of the greater part of the faeces, on the ground that they contain nitrogenous matters, whereas all the nitrogenous parts of the food should he absorbed for the purposes of nutrition. Thus these are probably the excreted products of changes in the system, which it is the province of the bowels to separate from the blood." - Dr. Frederick William Headland, MD in "On the Action of Medicines in the System", 1876.*

The manifold errors of habits, of effort, and of diet which tend to constipation are well recognised. In the discovery of some of these, and in their timely and persistent rectification, we can cure, without drugs, many of the slighter forms of faecal retention.

We should make quite sure we exhaust these measures in the treatment of every case of habitual constipation.

In the slighter cases, such non-medicinal treatment is usually sufficient for a good result; in severer cases, when drugs and instrumental aid cannot be avoided, all that well - ordered habits, well - directed efforts, and well-chosen diet can do should be regarded as the indispensable adjuvants of a more direct therapeusis.

To open the bowels is not to cure constipation, but only to relieve for a few hours one of its symptoms.

Always withholding drugs (laxatives) until drugless methods prove insufficient, establishes a sound therapeutic principle, and is a counsel of perfection which is salutary in its aim, and should be followed generally; but the insistence of patients for a purgative dose when alvine dejections are defective has taught me that patients are sometimes right in this matter, and that a cathartic dose may be an essential preliminary to a more causal cure, and give a fair and the best start for successful treatment by further medication, and by dietetic, disciplinary, and other hygienic methods.

Habitual constipation is a penalty of our imperfect civilization.

It is due to a habitual abstinence from emptying the rectum whenever the physiological (or natural), urgency to empty it is felt; it is also due to habitual defecation when seated upon a high seat; it is also due to habitually diminished activity of the abdominal muscles, including the psoai and iliaci, of the respiratory muscles, and of the muscular fibres of the large intestine.

It is also due to habitual abstinence from fruit.

Each of these causes is avoidable.

Each of these causes should be avoided before a laxative is taken for the cure of habitual constipation.

For causal treatment, we may note, too, that fatness of abdominal walls and abdominal contents favours constipation, while constipation disposes to fatness, and especially to intra-abdominal fattiness.

Here is a vicious circle, of therapeutic suggestiveness.

In the cure of costiveness (state of being costive; constipation; affected with constipation; causing constipation) our therapeutic clues arise well from an old definition of the malady, namely:

> *"In constipation the faeces are hard, and may be retained from that cause, from weakness of the muscular coat of the large intestines, or from diseases of the anus, making defecation difficult or painful." - New Sydenham Society's Lexicon" - Dr, Sir James Sawyer, MD in "Coprostasis; Its Causes, Prevention and Treatment", 1912.*

Coprostasis Costiveness

"Obstinate retention of the faeces in the Intestines:

1. Coprostasis Constipata – Constipation; Acute
2. Copostasis Obstipata – Obstipation; Chronic

Coprostasis Constipata: Constipation

The faeces when discharged congestive and voluminous. Temperament firm and rigid.

As the faeces are forced forward by the peristaltic action of the intestines, it is obvious, moreover, that whenever this action is weakened there must necessarily be a retardation, and consequently an accumulation of the faeces.

This sluggishness or torpitude of the bowels is produced by various causes: for sometimes the food is too insipid and destitute of stimulants, and sometimes there is a deficiency in the secretion of bile, which appears to be a natural stimulus to the internal surface of the intestines; and we have reason to believe that the latter is sometimes secreted in too dilute a state or with out its proper pungency: and sometimes also the muscular fibres of the larger intestines lose a considerable degree of healthy irritability, and are reduced to an extreme of paresis that amounts almost to paralysis.

And, if this occur, as it does occasionally without much failure of the appetite, the accumulation of faeces will be in some instances prodigious.

In the case of a young woman aged 28, the distension of the abdomen from this cause was so general as to be mistaken for pregnancy, especially as there was occasional sickness, with menstrual suppression and a sympathetic enlargement of the breasts.

The disease terminated fatally in about 3 years from its commencement.

The measured in circumference more than 51cm, and on dissection was found to contain 13.5 litres of faeces.

A stricture in any part of the intestinal canal, from whatever cause, has a tendency to produce a like accumulation, in the same manner as it produces one species of colic. But colic does not always follow; for the bowels are occasionally less irritable than usual, and the stomach continues sound. Intestinal strictures, as I have already had occasion to observe, are more frequently to be found in the large than in the small intestines; and, when in the colon, have sometimes existed without being suspected.

A shoe-maker aged 30, subject to habitual costiveness, became at length much more so; and from having motions 3 or 4 times a-week, passed them not oftener than once or twice in a week or a fortnight, and this, moreover, with considerable pain in the lower part of the belly; and at length was incapable of passing a motion by any means.

The real cause of the disease not being very clearly suspected, the strongest

purgatives were given to him, both by the mouth and in the form of clysters.

His appetite was but little interfered with, and he passed water freely.

A scoop was introduced into the rectum, but the gut was found empty.

Under this state of things the belly swelled gradually, and at length arrived at an enormous size, and the patient died in the 15th week from the last evacuation.

An examination after death showed the real nature of the cause; for at the lower end of the sigmoid flexure of the colon there was a narrow stricture, which would hardly admit the passage of a goose-quill (feather), accompanied with an ulcer, which was partly in the situation of the stricture, and partly in the gut above it.

The intestine was peculiarly loaded with faeces, and enormously distended; the mean of the transverse diameter being above 15cm.

All the large intestines, where the distension was consider able, had their muscular coat a good deal strengthened, and the longitudinal bands had become twice as broad and thick as in their natural state; the system thus wonderfully accommodating itself for many weeks to circumstances which seemed incompatible with the continuance of life.

The effects of constipation, when long continued, are pains in the head, nausea and sickness at the stomach, febrile irritation, general uneasiness in the abdominal region, congestion in the abdominal organs, and hence an impeded circulation of the blood, haemorrhoids, varices in the lower limbs, and, colic.

The best aperients in the present species of costiveness are those which quicken the descent of the faeces with as little increased action as possible; as diluent drinks sweetened with honey, the expressed oils of mild vegetables, as the olive, and almond; figs the pulp of cassia alone, or in the compound of neutral salts.

In some instances of very great difficulty, and of an anomalous kind, an affusion of cold water has been accompanied with great success after every other device has completely failed.

Two striking examples of this occur in a letter published in the Medical Transactions of the College.

The patients were from 50 to 60 years of age, one of temperate habits, the other addicted to spirituous liquors.

As a last resort, they were led into a wash house, laid on a cold, wet, brick-floor, and the water was dashed over the lower extremities and the pubes for a quarter of an hour at a time.

In addition to which, cold wet towels were applied to the abdomen of one of them in his bed.

Cold water was also drunk at the same time by the mouth. Both patients recovered.

Copostasis Obstipata: Obstipation

Faeces when discharged: hard, slender, and often scylabous. Temperament weakly or the habit sedentary.

This is in most cases the result of a sluggishness of the peristaltic motion, in

persons of infirm or delicate health: in consequence of which the refuse matter of the aliment usually small in quantity, is a long time passing through the intestinal tube, and hence becomes indurated, shrunk, and shrivelled, so to speak, by the length of time it is exposed to the power of the intestinal absorbents, not withstanding they may have no such increased action as occurs in the preceding species.

This form of costiveness is most frequently found in persons of advanced life; in whom the faeces, minute in quantity and deprived of moisture, are sometimes discharged in the form of a scroll, and sometimes in small lumps, of the shape of buttons or balls, as I have already observed when treating of colica constipata; which affection also, as there remarked, is often produced by the irritation that these retarded materials at length excite.

So feeble, indeed, is the expulsive power of the intestines in many cases of old age, that it is sometimes necessary, as recommended by Dr. Warren, to introduce a sort of marrow-spoon up the rectum for the purpose of bringing away the dry masses that have lodged there.

It sometimes happens, however, that a contrary temperament prevails in old age; that the bowels are irritable, and the motions loose." - Dr John Mason Good, MD, FRS in "The Study of Medicine", Vol. I, 1822.

Coprostasis, Retention of the Faeces

"Coprostasis coacta, (Obstipatio, Cull.). Costiveness.

This is a complaint to which sedentary persons and bonvivants are much exposed, and which has long and justly been considered a frequent cause of the numerous dyspeptic cases we daily witness.

Its obvious cure is the use of cathartics; and for these medicines formulae abound in every family.

The frequent recourse which is had to purgatives tends, however, to impair the functions of the intestines, by rendering the peristaltic powers inactive except under the influence of stimulus; and further, even this stimulus, as is well known, gradually loses its effect by repetition.

On this account our therapeutical indications should embrace a wider field of remedial agency.

As the muscular fibres are the agents of the peristaltic motion, we should endeavour to strengthen the tone of the muscular system generally, since one part is seldom weak without all participating in the same debility.

This purpose is peculiarly to be effected by exercise to such a degree as to strengthen muscular contraction without producing fatigue; by the cold bath, and by medicines which are said to give tone to the muscles.

Mr. Howship, in his work on the intestines, says, that bark internally administered for some continuance will bring on the healthy action of the bowels to such a degree that purgatives become unnecessary.

The best method of using it seems to be to unite it with a moderate dose of cathartic medicine, and then gradually diminish the dose of the latter, and increase that of the former.

If costiveness continues, however, a clyster of warm water will produce the alvine discharge, and without, of course, stimulating in any inordinate degree the entire secretion, since this measure does nothing more than dissolve the faeces.

The use of clysters is becoming more fashionable in this country, and there is every reason to believe, that, if we used them oftener, and applied drastic purges less frequently, the digestive apparatus of most persons would be found in a better condition.

An indolent habit of neglecting the calls of nature has been the cause of the complaint; and, even then, straining should not be long persisted in.

Costiveness seldom occurs in young infants. When it does, it always arises from badness or deficiency of the nurse's milk, or from the food.

If one copious evacuation take place every 24 hours, and the infant be thriving, there is no occasion for interference; but, if there be any greater torpor of the bowels than this, suitable remedies are to be employed.

For this purpose, a brisk laxative may be given every day, for 4 or 5 times successively.

Where these means fail, and there is reason to attribute the costiveness to the nurse's milk, we must regulate the diet, and open freely the bowels, of the latter.

But, if it be found that the milk still possesses that injurious quality, the nurse should, if possible, be changed." - in "Encyclopaedia Londinensis" 1823.

Intestinal Constipation

"The essential characteristic of life activity, in that harmonious bodily condition known as health, is rhythm.

The pulsation of the heart, breathing, sleep and our very footfalls are rhythmic.

The laws of hygiene are based upon regularity in all matters relating to the hours for work, for rest, for taking food and exercise.

Intestinal elimination of the waste products of food is normally rhythmic and automatic also; but where "none of the residue of a meal, taken 8 hours after defecation, is excreted within 40 hours, the condition known as constipation exists.

There are 2 great classes of constipation:

1. That in which the passage thru the intestines is delayed while defecation is normal - intestinal constipation;
2. That in which there is no delay in the arrival of feces in the pelvic colon, but their final excretion is not performed adequately - pelvirectal constipation or dyschezia.

Intestinal elimination of bodily waste products is the result of peristalsis, an undulatory movement of the musculature of the intestines produced by stimulation that is partly mechanical and partly chemical.

The mechanical action is based, of course, upon nervous motor stimulation, peristalsis being reflex action in response to this nerve excitement.

If the musculature is over distended by gases, generated by the decomposition of food substances, the intestines are stretched beyond their power of recovery to a degree of responsive contraction and expansion in peristaltic activity.

Other causes of muscular weakness in the intestinal wall are excessive fat, or atony in histories of long present constipation.

When the diet is not so regulated as to include substances containing the chemical and physical elements necessary for stimulation on the intestinal juices and intestinal wall, constipation in one form or another will eventually appear.

It is thus evident that the fundamental bodily causes of constipation are directly due to the conditions governing the nervous system or to diet.

In some instances it is, therefore, a secondary condition to psychic disorders and in consequence, bears intimate relationship to moral and emotional traits.

Usually where constipation is present and where it is aggravated by or associated with indiscretion in diet or prolonged mental strain, excitement or worry; by dissipation or debauchery; by prolonged lack of rest or by disturbed sleep, there is usually a concomitant condition of indigestion or some form of acute or chronic gastritis or gastroenteritis.

It is my belief that the natural position not only brings early relief, but that its tendency is to restore the tonicity of the intestinal organs by bringing them into normal position.

Thus, pressure on nerves is relieved, circulation of the blood is stimulated, normal force is exerted and nature is given a chance to assist in the healing process." - Dr L. Drosin, MD, in "Natural or Primitive Posture at Stool in Relation to the Cause and Cure of Constipation and Some of its Clinical Aspects", American Medicine, October 1922.

Constipation Viewed as a Disease "Per Se" And as an Exciting Cause of Disease

"It is my intention in this communication to bring under the notice of the profession a "casus morbi" which I venture to say, although it is hardly ever overlooked, does not as a rule receive the attention it deserves; and, consequently, it might very often as well be ignored altogether as have bestowed upon it the passing notice so frequently accorded it.

My observations extend over a period of 6 years, and the cases quoted are selected from a list of over 200.

It does seem strange to meet with individuals almost daily who have been under treatment for weeks and months, and in many instances for years, and all this without any relief being experienced, when a little judicious treatment at the commencement of the symptoms of prostration might have prevented much of the suffering that has ensued, and have afforded speedy relief.

If we remember the power that the colon possesses of absorbing fluids (which numerous experiments place beyond a doubt), we do not require to ask an explanation as to the disappearance of the watery constituent of the stools in subjects suffering from constipation.

I have heard it stated by a lecturer on the practice of medicine that "it was quite compatible with health to go a week, or even longer, without having an evacuation of the bowels'' - that, in fact, it was all a matter of habit.

Now, my observations go entirely to disprove such statements; moreover, such remarks are most apt to lead a student to look upon constipation as quite a trivial matter.

If he does so, he will doubtless find that he has a great deal to unlearn, as he will soon discover that quite a host of complaints in every period of life may directly or indirectly take their origin in this abnormal condition of the bowels, and in very many instances the symptoms as a whole can be shown to be dependent upon this morbid condition.

How is it that a smart purge, and a thorough clearing of the "primae viae" (the first or main passages, the alimentary canal, the bowels), have such a beneficial effect when one is feeling out of sorts?

One rarely begins the treatment of any disease without being first satisfied as to the state of the bowels and endeavouring to rectify them.

A purgative will probably be given if there is constipation, and yet in numberless instances purgatives may be given over and over again without having the effect of clearing away scybalous masses (hardened stools) from the lower bowel.

When constipation has continued for a lengthened period, the colon becomes distended, and the saculae (haustra) attain a greater capacity.

The gut loses its tonicity, and consequently its power of contracting upon and expelling the faeces is reduced very maternally.

Thus we find that patients, when asked if they have a motion of the bowels

every day, though they may insist that they are quite regular in that respect, yet, on close questioning, are led to confess that they never experience that sense of complete relief which they would wish to feel after a stool, but, on the contrary, that there is a desire to sit on the W.C. and endeavour to void more faeces.

It will also be found that such individuals always complain of the faeces being lumpy and difficult to pass.

Others again will inform you that, so far from their bowels being constipated, they have frequent attacks of diarrhoea, but it will not be difficult to discover that such attacks are invariably preceded and followed by constipation; moreover, that the diarrhoeal evacuation contains hard pieces of feculent matter often described as pellets.

How are these little attacks of diarrhoea to be accounted for? That it is not diarrhoea in the ordinary sense of the word is not difficult to show, as the stools are small in quantity, and do not come away with the rush that is generally a symptom of diarrhoea in its true type.

This form of diarrhoea occurs most frequently early in the morning, often necessitating the patient rising out of bed and going to stool; indeed, there is no choice, as the desire is so urgent.

There may be two or three such stools before breakfast, and the probability is there will be no more during the remainder of that day. Another characteristic of these stools is that they possess an extraordinarily offensive odour.

It is quite evident that what we have to deal with at present is a "looseness" of only a limited portion of the intestine, and is due to the irritation produced by the presence of hard masses of scybala in the colon, which act as an irritant on that portion of the bowel and produces a catarrh in their immediate vicinity; the mucus which is excreted from the mucous membrane then acts as a partial solvent to a portion of the scybalous matter, at the same time a partial disintegration of it takes place; and so we find that the stools in this intermittent kind of diarrhoea always contain innumerable small pieces of hard faeces.

In such attacks it must, of course, be worse than useless to employ the ordinary treatment of diarrhoea by opiates or astringents.

The removal of the cause must be aimed at, and hence the importance of a correct diagnosis.

It will be generally admitted that when the faeces descend into the colon they are of a soft consistence; that they are not hard and dry.

What has become then of their watery constituents when they are converted into hard scybalous masses?

Sometimes so difficult to pass are they, that an evacuation of the bowels in such circumstances may actually produce more suffering than the pains of labour, and, as I saw only a few days ago, may really bring on premature parturition.

I would repeat, what becomes of the watery portion of the faeces, and what is the effect on the general system, especially the nervous apparatus, of the hardened matter lodging in the bowels?

We have not to look far for an answer to the first part of the question when we

are cognisant of the power of absorbing liquids which the large intestine possesses.

The fluid most certainly fads its way into the blood, and thus of necessity produces a form of blood-poisoning. We may note the folding effects produced by the absorption of such fetid matter, - the red corpuscle become diseased,they ere alter in colour, diminished in numbers, have their carrying power lessened.

Thus a sallow complexion results, dark rings appear below the eyes where the skin is thin and more transparent, the limbs and extremities are cold in consequence of oxygen being supplied in less quantity.

There is a feeling of lethargy due to the blood being vitiated and the corpuscles being in this enfeebled state. Consequently the system is not nourished, and there is a falling off in flesh. Then there is a diseased blood supply circulating through the nervous system, and as a consequence nervous depression coexists.

The pulse becomes slow and easily compressed. There is a feeling of numbness in the extremities, the organs of digestion and assimilation are lowered in tone.

There is loss of memory, and a want of power of concentrating the thoughts heavy drowsiness supervenes, which never seems to be removed by what appears to be really sound sleep, and all the functions of the body are carried on in an unsatisfactory way. We will find, too, that the patient is tired on very little exertion of any kind.

Then there are numerous local symptoms produced by the presence of scybala in the colon, which very often are attributed to other causes. Among these may be noted most acute pain on pressure over the situation of the hardened matter, and so severe may this be that it may simulate peritonitis.

If it occurs in women we often observe, as a consequence, ovarian neuralgia, this being excited by the irritation conveyed to the ovary by the presence of scybala in its immediate neighbourhood, while predisposing cause exists in the lowered nervous tone consequent upon blood-poisoning.

Frequently there is acute pain complained of over the ilio-caecal valve, and in many, if not the very great majority of instances, typhlitis is a direct consequence of the irritation produced by scybala lodging in the cul de sac.

Irritability of the bladder is another local symptom frequently resulting from a similar condition of things in the immediate neighbourhood of the organ.

Displacements of the uterus may be and are caused by large accumulations in the rectum, and in every case are very much aggravated by such a state of matters.

I have seen cases where an accumulation of this kind has been mistaken for pregnancy, and at other times where it has been looked upon as an ovarian tumour.

A very constant effect of this condition is the prevention of refreshing sleep at night. The patient always complains of dreaming, and nightmare is a frequent symptom of this torpid state of the bowels.

It will invariably be ascertained that there is no refreshment from sleep, in fact the remark is generally made that he or she is more in the morning than they were on going to bed.

In many cases I have found the temperature of the body rising at evening and falling again towards morning, so much so that typhoid fever has been suspected to be present. If children are the sufferers, a whole train of ailments may result, an idea of which will best be formed by a perusal of the report of cases given below.

In a most careful perusal of the most recent works on the practice of medicine, I cannot find in one of them the subject of constipation gone into per se, and even where it is mentioned as a concomitant of other diseases, it is, barely glanced at.

This is all the more strange when it is beyond doubt, not only a disease having a most enormous train of painful symptoms, but is a predisposing cause of quite a host of other ailments.

In illustration of the foregoing remarks I append a series of cases, commencing with the youngest.

Case 1 - Mrs. J's baby, aged 9 months, has been for some nights suffering acute pain, as evidenced by crying most bitterly, and kicking for hours at a timer and there was also a considerable amount of fever; bit as the symptoms always subsided towards morning, some days were allowed to elapse before I was sent for. I ascertained that the following symptoms had been remarked by the mother and nurse, besides those enumerated above: If by chance the child fell asleep, it invariably wakened with a start, and began to shriek as if in pain.

There were frequent evacuations from the bowels, and latterly a good deal of mucus mixed with small pieces of feculent matter had been voided. Moreover, the child began to fall off in flesh, and it was when this manifested itself that I was sent for. I observed the child had a blanched and sallow physiognomy.

The abdomen was very much distended, and it was ascertained that there had been pretty constant vomiting after taking food.

One would naturally suppose that such a train of symptoms pointed clearly to some head mischief and I cannot help thinking that in many cases of supposed hydrocephalus in children, the symptoms are due to no more than an accumulation of scybala in the colon, the presence of which acts as a direct to the nervous system.

The treatment consisted in giving an enema of salt and water: 2 teaspoonfuls of the former to a teacupful of the latter, the good effect of which was manifest in a few hours, and the infant had a refreshing sleep after the enema had acted freely. This was the first satisfactory sleep the child had had for several days.

No other remedies were called for.

It may be remarked by some that a dose of castor oil would have had quite as good an effect, but it had been tried more than once without giving any prolonged relief, although it acted upon the bowels.

I have often seen this happen, and I can only explain it in this way, that the scybala lie impacted in the saculae of the colon, and are not dislodged by the action of the oil, the matter removed by the oil simply passing over the accumulations of hardened faeces.

In this case there was observed the anaemic look, falling off in flesh, flabby condition of the muscles, starting during sleep, fever at night, &c., all of which symptoms disappeared when the irritant was removed.

Case 2 — F. M., aged 3, had prolapsus of the rectum, induced by a prolonged constipated condition of the lower bowel, but the prolapse was attributed by the mother to the boy's health having become deteriorated, whereas the ill-health was consequent upon the same cause as the prolapsus.

The fact was elicited that the nurse had not been attending to the state of the child's bowels, and they had become so constipated that the little one shrank from going to stool because of the severe pain it produced. Coincident with this the boy's health began to fail. He was losing flesh, became feverish towards night, was restless, and started up during sleep, and throughout the day was listless and easily fatigued. At the same time his appetite was very fitful.

It was the above symptoms which led to the conclusion that the prolapsus was due to the difficulty and consequent straining accompanying a motion of the bowels.

An enema was ordered to be given every second day, and within a short time the child's health was completely re-established.

Case 3 — My own boy, aged 6, gradually began to lose flesh, and became very lethargic and easily fatigued. There was also a feverish condition at night, and sleep was always disturbed by starting, and sometimes a species of delirium would come on for a period varying from a few minutes to an hour or so during the night. He was drowsy and irritable, and cried on the least provocation.

There was also loss of appetite and failing strength.

The bowels acted every day, and seemed to be in very fair order. On examining the stools however, they were found not to be sufficient in quantity, and were not soft enough in their consistence.

He had an enema of salt and water, which brought away a large evacuation of hard faeces, and "within a very few" hours a decided improvement was observed in his health.

He had all the appearance as if a heavy load had bun lifted off him. He slept well the following night, and very soon regained his wonted health and spirits.

This was all the treatment adopted. It may here be remarked that mothers and nurse-maids are very apt to be put off their guard when the condition of the child's bowels is being inquired into.

The answer will frequently be given that the patient is quite regular in this respect.

In fact, one is often informed that "tie little invalid is very regular indeed," having often "more than one motion in the day."

Now this is always a suspicious circumstance, and requires close attention.

The stools should be examined, and we will almost invariably find that they are

very small in quantity and of very hard consistence.

Inquiry will further bring out the information that the child inclines to sit at stool and strain for a long time after having had a motion. This is because the rectum is not completely emptied, and the reason of the frequent small stools is due to the same cause.

Another effect of this, more especially in boys, is an inability to retain the urine for any length of time, and thus in many instances we may account for the habit boys so frequently have of wetting the bed during sleep.

Case 4.— J. P-, aged 12, a girl, tall of her age, very thin and anaemic. She complains of being languid and easily tired, and inclines to lounge about all day.

Naturally she is a sharp and intelligent girl, and is fond of her books, but for the past few weeks she does not care for her lessons, and altogether is quite changed in her demeanour. She inclines also to lie still in the morning, instead of' rising at her usual hour, and always expresses herself as " feeling so weary."

Her sleep at night is very much disturbed by dreams and nightmare.

Her appetite is variable. The bowels are very costive, and she confesses that she has been in the habit of putting off going to stool when she has felt the desire to go.

She also complains of pain at times over the right iliac region, which is tender on pressure.

The treatment consisted, of an enema of salt and water every second night, which speedily removed all the symptoms, and a rapid restoration to health was the result.

Case 5.—M. P-, aged 16, presents a chlorotic appearance. She is very weak, and is changed from being a lively and active girl, into one of languid, lethargic, and desponding appearance. She is irritable and hysterical. Her sleep is broken, and in the morning there is no refreshment from sleep, and in consequence there is a wish to lie still in bed, and a disinclination to perform any of the duties she used to enjoy attending to. She very speedily becomes breathless on moving about, and complains of an inability to walk even a short distance without it entailing great fatigue. The extremities, especially the feet, are hardly ever warm. The menses are regular, but the amount of discharge is much less than usual. The bowels are costive, and on inquiry the patient says that when she has a stool, there is a feeling that the relief is not complete.

The treatment consisted of an enema containing a tablespoonful of salt in one pint of tepid water, every second day. In a few days there was a marked improvement in all the symptoms.

Blaud's pills were also prescribed, and in three weeks the girl was quite restored to her usual colour and active health.

Note: P. Blaud of Beaucaire (1831) was a French doctor of medicine who introduced and started the use of Blaud's pills or iron pills as a medication for patients suffering from anemia. Blaud of Beaucaire was one of the leading physicians at the Hospital of Beaucaire in France

Case 6 - Miss R., aged 20 a healthy-looking country girl, came to town to be treated for dysmenorrhoea, which had caused her intense suffering for close upon three years, and which was growing month by month more severe.

The patient was very hysterical, and her mother informed me that she was low-spirited, and irritable in her temper.

She was gradually becoming less able for the least amount of fatigue; and however much sleep she might obtain it never was followed by a feeling of refreshment. Her digestion was very much impaired, and she complained of cold feet, and there was a tendency to shiver even when the temperature was high.

As the dysmenorrhoea was so severe, all the above symptoms were attributed to this, and I was inclined to endorse this view before I had made a vaginal examination, but on passing the finger into the vagina with the object of guiding the uterine sound, I found that the rectum was loaded with scybala.

In consequence of this discovery my opinion as to the casus morbi became considerably modified, and I was inclined to attribute, if not in toto, at least to a very considerable extent, many of the symptoms to this sluggish condition of the bowel, instead of to the dysmenorrhoea.

No doubt the uterine affection had a very powerful influence on the girl's bad health; at the same time, when we know. She disastrous effects of constipation-rendering as it does the nervous system highly susceptible of morbid impressions, besides acting in this instance as a direct irritant to the womb, in consequence of the close proximity of the hardened faeces to the organ, - we dare not ignore this morbid condition of the bowel in considering what the factors of disease were in this case.

Moreover, it was ascertained that constipation had troubled the patient for a longer period than the dysmenorrhea had, and she informed me that she rarely felt completely relieved, after she had bun at stool.

The treatment consisted in having the uterine sound passed bi-weekly; and an enema of a tablespoonful of salt to a 250ml of tepid water was ordered So be used every alternate day.

Before the monthly period came round her health was decidedly improved, so that the improvement could not be due to any alleviation of the uterine disorder.

After about 6 weeks' treatment she went home, quite recovered.

It is now nearly 2 years since the treatment was carried out, and I understand there has bun no return of the dysmenorrhea, and the young lady's health is otherwise all that can be desired.

Note: Dysmenorrhea, also known as painful periods, or menstrual cramps, is pain during menstruation. Its usual onset occurs around the time that menstruation begins. Symptoms typically last less than three days. The pain is usually in the pelvis or lower abdomen.

Case 7 - Mrs. S., aged 26, is a highly nervous lady who can hardly speak without bursting into tears. She complains of great prostration and want of energy. She sleeps pretty well, but never feels refreshed in the morning. She is troubled very much with dreams and sometimes with nightmare.

The patient is very low-spirited, and takes a very gloomy view of rite. There is little or no appetite, and when she does eat she always wishes she had not done so, as there is so much discomfort after a meal. She is losing flesh; and complains of palpitation of the heart, severe frontal headache, bad taste in the mouth (especially in the morning), severe pain over She lumbar region, and a bearing-down sensation " as if her inside were coming down." Her pulse is very feeble. She says her bowels are very costive, and, though her menses are regular, there is always severe dysmenorrhea.

A vaginal examination reveals retroflexion of the uterus, and the rectum loaded with hardened faeces, winch are pressing on the fundus of the uterus, and actually tending to hold it in its abnormal position. The womb measures three inches, and its walls are soft and flabby. My impression on making the examination was, that the constantly loaded condition of the rectum was really the cause of the malposition of the organ, as the patient had never been pregnant, and the walls of the uterus were flaccid and therefore more easily bent out of position.

Whilst attending to the uterine ailment, I ordered an enema of salt and water to be used every alternate day, which gave the greatest possible relief to the patient, and she gained strength so rapidly that at the end of three months she expressed herself as feeling perfectly well.

It would be quite possible to go on quoting cases almost ad infinitum, all of which would demonstrate the baneful effects of constipation; but I trust that the few I have selected will be sufficient to direct the attention of the profession more particularly **to this morbid condition, which proves itself not only to be a most distressing disease, but is the superinducing cause of so many other disorders.**

It will be observed that I have not related any cases of adult males who have been treated by me for this affection, but it is not because there is a paucity of such cases, for although females are much more prone to this disease, and suffer more from it than members of the made sex, yet one often meets with constipation in men which not only itself produces a whole host of distressing symptoms, but when allowed to go on unchecked, helps to develop what but for it might still remain latent disease.

I do not happen to have notes of such cases, but I can recall to my mind quite a number of instances where constipation was really the cause of great mental, depression, irritability of temper, and weakness of body, these all being attributed

to want of tone, but which speedily disappeared when enemata were regularly employed to keep the bowels in a state of action." - Dr Robert Bell, MD, Physician to the Glasgow Institution for Disease of Women and Children, in "The Lancet", 14 February 1880.

Constipation and General Infection

"The Dietetic and Hygienic Gazette calls attention to the studies on acute poliomyelitis, by Leiner and Weisner, which seem to prove that constipation may be a prominent factor of general infection.

Flexner and Lewis produced this disease in monkeys by injecting the poison into the brain, spinal canal, veins and elsewhere, but not by feeding it. Evidently the monkey has some means for destroying the poison in his gastrointestinal tract.

The European workers, by first giving laudanum to check peristalsis, have succeeded in producing the disease by poison introduced through a stomach tube.

The long guessed truth of the effects of constipations is thus made a definite fact, and the importance of a thorough toilet of the inner surface of the body is made so plain that we have no excuse for neglect of so simple a measure of hygiene.

Like other measures for maintaining health, this needs to be impressed in early life.

Most parents are anxious lest their children appear in public with soiled hands or face, but they take little or no interest in the degree of cleanliness of their food canals which, so far as health is concerned, is of far more moment." - in "Clinical Medicine", 1910.

Some Remarks on Chronic Intestinal Stasis

"Food products that are absorbed from the gastrointestinal tract are carried by the portal vein to the liver.

In that organ they undergo a process of purification. Certain organisms or toxins are destroyed or are converted into materials harmless to the tissues through which they are to pass, and are eliminated by the several excretory organs, as the kidneys, lungs, and skin.

The thyroid gland secretes material which acts as a stimulant to the tissues and keeps their metabolism working at a normal rate. This substance has been obtained in a pure form at the Mayo Clinic, and is described in the Transactions of that clinic for 1917 by Mr. E. C. Kendall.

The adrenals and the pituitary gland also act in controlling certain tissue changes by means of their secretions.

The spleen produces a proportion of leucocytes and destroys a number of effete red corpuscles. Many other instances of specific glandular activity will readily occur to the reader.

Just as every change. which the skeleton of the labourer undergoes in order to accommodate itself to its surroundings tends to shorten the life of the individual, so do all the changes which the organs undergo to meet their surroundings in association with and dependent upon those in the gastro-intestinal tract, tend to shorten life. Such changes in the organs are classified as diseases.

Effects on Other Organs

I do not know whether bacteria and toxins from the intestine reach the systemic circulation through the thoracic duct, and so escape destruction in the liver, though I am aware that they reach the regional lymphatics, since Dr. N. Mutch has obtained bacteria from that source on man occasions in cases of intestinal stasis.

The deleterious materials, whatever they are, which pass unchanged through the liver and get into the systemic circulation damage every tissue in the body.

The impure blood would appear to act in a similar manner on the thyroid gland.

Clinically, in a typical case of intestinal auto-intoxication the thyroid gland at first enlarges as if stimulated to excessive function.

As time goes on it steadily diminishes in size till the isthmus can no longer be felt by the finger. Associated with this atrophy symptoms develop that suggest a defective function of this gland.

It would seem fair to argue by analogy that the adrenal and pituitary glands behave in a similar manner in their attempt to meet the disability that results from the supply to their tissues of blood contaminated with deleterious products.

The evidence of the defective action of the adrenal is suggested by the very typical pigmentation of the skin which develops in chronic intestinal stasis. I have described on many occasions the deleterious action of the impure blood on many others of the tissues in the body.

How the blood-forming organs behave we can judge by the anaemia which is always associated with this condition sooner or later. This anaemia would appear to be the result of flooding of these organs with impure blood which depresses their functional activity.

The kidneys suffer from the filtration through them of irritating products, and changes take place in consequence after a time. The evidence that these degenerative processes are due to the presence of toxic material in the blood is shown by the fact that all manifestations tend to disappear with striking rapidity when the source of fouling of the blood stream has been removed.

Secondary Infections

Owing to the lowered resisting power of the tissues to the entry of the organisms foci of infection are readily developed.

The septic products of such infection are carried directly into the systemic circulation and are not filtered through the liver.

Consequently the effects which are exerted on the body by these secondary infections are much more harmful. This can readily be illustrated.

A patient suffering from intestinal auto-intoxication becomes affected by rheumatoid arthritis.

The progress of this disease may be slow till the additional development of pyorrhoea occurs.

The absorption of the toxins from the diseased gums into the blood stream at once exaggerates in a remarkable manner the rate of progress of the rheumatoidal condition. The curing of the pyorrhaea by local application or by the unnecessary removal of the affected teeth immediately effects a very marked improvement in the condition of the diseased joints.

This is sometimes so apparent as to lead casual observers to assume that the rheumatoidal infection was consequent solely on the infection of the gums, since they do not realise that both infections have a common causal antecedent in the lowered vitality which results from chronic intestinal stasis.

At the same time, it shows very clearly how one secondary infection may accentuate another and how necessary it is to search for such infections.

Especially is this the case when the infecting organism is the same in the two foci.

The freeing of the portal circulation from products of auto-intoxication at once stops the progress of the Rheumatoid Arthritis and facilitates the rapid and permanent cure of the affected gums.

Another instance of a secondary infection of the alimentary canal is that which results in pernicious anaemia.

Changes in Liver, Breast, and Pancreas

Not only is the liver tissue damaged by an excess of one of its functions and by the impure blood supplied for its nutrition, through the hepatic artery, which also contains toxic material, but its tissues can also be injured through the ducts which permeate every portion of its structure.

Dr. Mutch has demonstrated very clearly by cultures made from cases of chronic intestinal stasis operated on by me that the whole length of the small intestine, including the duodenum, often contains infective organisms, and there is no doubt whatever that these organisms may extend along the ducts of the liver and pancreas and produce changes in the walls of the ducts and in the cells and connective tissues of these organs.

Now let us consider the conditions or changes that develop in the liver in consequence of the infection of its ducts, from the flooding of its tissues with impure blood through the hepatic artery, and from the excessive demand made upon it by the abnormal quantity of toxic materials and of organisms which are carried to it through the portal circulation. That definite and important degenerative changes must result sooner or later in varying degrees from these influences is undeniable.

At the same time, we are not sufficiently well informed to be able to determine how each of these agents acts. We know enough to recognise some of the effects.

For instance, we are very familiar with cholecystitis and the associated changes in the larger ducts of the liver. We also know that gall-stones are produced by infection of the gall-bladder, and are sometimes formed in the ducts of the liver.

Later results are the blocking of the cystic duct, the common bile duct, and of the intestine by gall-stones, together with cancer of the cystic and common bile ducts, from the irritation produced by the presence of these stones.

How far primary cancer of the liver is produced by irritation of the terminal ducts or of the cells and connective tissue by impure blood I am not in a position to demonstrate, though by analogy there would appear to be but little doubt as to the causal association.

I think the various forms of cirrhosis are explicable in the same way.

For instance, the distribution of the changes in Hanot's disease suggests an ascending infection of the biliary ducts, while those of portal cirrhosis appear to be due to toxins reaching the liver through the portal vein.

In every advanced case of chronic intestinal stasis the presence of induration of the pancreas can be demonstrated, and there is no doubt that carcinoma develops in these fibrous patches. I showed many years ago that it develops in the breast, which undergoes similar changes from intestinal auto-intoxication.

I notice that since I described this sequence as occurring in the breast a number of others have observed and described it. Originally the suggestion was received with ridicule.

It is now generally recognised that traumatism is a necessary causal factor in the development of cancer, though it is probably not the sole factor.

Traumatism as a determining factor can readily be demonstrated in all carcinomatous ulcers of the gastro-intestinal tract, whether produced by pressure or impact, as in ulcers of the tongue, pylorus, and large bowel, or by the exercise of excessive strain, as in ulcers of the lesser curvature of the stomach.

In cancer of the breast and pancreas the traumatism is apparently effected by the damage sustained by groups of cells from contraction of the fibrous tissue about them, this formation of fibrous tissue being the result of autointoxication.

It is probable that a similar change due to the same cause antedates the development of cancer in the liver, but this cannot be demonstrated in the same clear manner as in the breast and pancreas.

The calculi which form in the pancreatic ducts owe their origin to septic infection, as in the case of the biliary calculi.

Thyroid Gland

I have already pointed out that in the earlier stages of stasis the thyroid appears to enlarge as if stimulated to perform its function more efficiently.

Later it becomes small and hard.

That is what one would expect to happen on general principles. McCarrison

(Lancet 1913) has demonstrated that the flooding of the intestine with certain faecal products causes goitrous changes; that these changes disappear if the supply of these products be stopped and if the patient be treated with an intestinal antiseptic; and that these goitrous changes are influenced favourably by the use of such vaccines as tend to sterilise the contents of the small intestine.

Also, that a similar result follows the removal of the intestinal infection by operation.

It would appear reasonable to conclude from McCarrison's experiments and observations that-as goitre results from the contamination of the water - or food - supply with ordinary faecal matter and can be cured by the cessation of the infection-goitrous conditions as they exist among people whose food is not contaminated by sewage products are consequent on the absorption from the small intestine of material which has become contaminated by faecal organisms which have extended up to its stagnating contents from the large bowel.

This is the view that I have put forward for many years, and which has received ample confirmation from McCarrison's elaborate researches.

In a number of cases of goitre in its several varieties occurring in patients whose food could not have been infected by sewage products and in whom radiography demonstrated the presence of wellmarked stasis, and cultures taken from the contents of the small intestine at varying levels yielded organisms, the freeing of the ileal effluent by colectomy or by simpler means had resulted in the restoration of the thyroid body to its normal size.

The results of these operations differ materially in the various forms of thyroidal affections. While the simple goitrous enlargement yields rapidly the size of the adenomatous thyroid diminishes more slowly.

The exophthalmic thyroid always benefits in that a remarkable improvement takes place in the patient's health, weight, and happiness, although the special manifestations of the disease do not always disappear completely.

Instances of the results of some of these operations are described by Dr Mutch in "The Operative Treatment of Chronic Intestinal Stasis"." - Sir W. Arbuthnot Lane, FRCS, in "The Lancet", 28 September 1918.

> *"Dr Samuel Weiss, MD in "Diseases of the Liver, Gallbladder, Ducts and Pancreas, Their Diagnosis and Treatment", on p. 276, under Classification of the Functional Derangements of the Liver,* ***there is listed a congeries of symptoms that is strangely reminiscent of the alleged symptomatology of chronic intestinal stasis."*** *- in "Annals of Surgery", February 1936.*

Chapter 61

Embryology and Physiology of Colonic Stasis

"The importance of the colon is borne in upon us by the recurring experiences of our daily lives. On its periodic functioning depend our health, comfort, mental alertness and emotional outlook to a greater degree than we care to confess.

Who is more of a misanthrope than the subject of a loaded colon.

Optimism and pessimism in outlook may be decided by the state of the colon, good temper or bad temper, sunshine or cloud in the domestic circle.

Recall, too, the contrast between the clear skin and pinkness of complexion on the one hand and the muddy skin and sallow mien on the other hand, the former associated with the functioning and the latter with the non functioning colon.

Another fact worthy of note is the extraordinary rapidity with which unloading of the lower bowel is followed by relief of general abdominal discomforts and the re-establishment of a sense of well being.

This responsiveness, this influence for weal or woe, presents the colon to our minds as an organ with a highly developed functional activity closely linked up not only with other portions of the alimentary tract, but with the higher nervous centres.

They do not suggest the colon as playing a merely mechanical part, or as a structure of declining importance, a fading evolutionary remnant, to be lightly cast aside as of doubtful utility to its owner.

When we contemplate the many and rapidly changing demands which modern life makes upon our digestive system, and side by side with this the exceeding slowness with which adaptive changes in structure evolve, it is small wonder that there is an increasing strain on functional efficiency and that function gives out.

This tax on function is in some measure due to the food we eat and the way we eat it, but perhaps in greater measure to the strain and stress associated with the pace of life.

From this it emerges that the determination of disease in part depends on where stress falls, and how far the individual is able to meet the stress.

There is a group of people whose abdomens are over responsive to nerve impressions.

Fatigue, anxiety, intensive endeavour manifest themselves in the hollow viscera, and it may be, through the agency of internal secretions. So do reflex disturbances.

In some, it may be, the stomach is irritable and hypertonic, and secretes too much hydrochloric acid; such are prone to duodenal ulcer, whereas in others the distal colon is irritable and hypertonic, and has its secretions disturbed; such are prone to colitis.

In both of these the prime cause of disease is disordered function and it is curious to note that the first is more common in men and the second in women."

The words that I have just read to you form the opening paragraph of the annual oration to the Medical Society of London by Lord Dawson of Penn, a man that did wonderfully good work as a physician and as an organizer during the war.

I think that I may assume that the majority of you accept the views expressed by Lord Dawson as approximately correct, at any rate sufficiently accurate to form a basis for further consideration and discussion.

The next question that arises, naturally is. Why is it so? I think that the reply would be in general terms, that within the colon are matters that if not regularly and properly disposed of other-wise are absorbed into the body and there interfere with the functioning of the organs concerned in the carrying on of the processes of life.

Further thought would evolve the idea that delay or retention is closely related to absorption.

Metchnikoff a Pathologist, Barclay Smith an Anatomist and Sir Arbuthnut Lane a Surgeon, have developed this idea, and preached it till we are all familiar with the arguments: it may even be possible that the subject has suffered from being over advocated.

You all know, I am sure, the pathology and morbid anatomy of this subject as taught by Lane.

Sir Arthur Keith has given a very valuable and enlightening contribution in his discovery and description of nodal tissue situated at different points of the alimentary tract, that control the movements of the stomach and intestines.

Indeed it is possible, may I even say probable, that the real pathology of what we term colonic stasis may finally be proven to be a question of nerves.

However, our distinguished British colleague would relieve the situation by removing the colon.

As a result of his teaching the colon has been removed many times, and in many countries and by many surgeons.

I do not propose to discuss the procedure nor its results at the present time, but will simply say that it is a very major operation, that has not always been followed by the happiest results.

Draper and Lynch in their experimental work found that absorption was particularly active from the caecum and ascending colon.

Many surgeons welcomed this finding and treated cases of colonic stasis by removing the caecum and ascending colon and joining the lower ileum to the transverse colon. Speaking for myself I may say that this comparatively simple procedure has given quite as much satisfaction if not more, than a complete

colectomy. A recent experience has suggested that embryology may perhaps throw some light on this question of colonic stasis, particularly if it is found that the caecum and ascending colon are responsible for the toxaemia that results from intestinal stasis.

By one of those strange coincidences that we are all familiar with, the two patients presenting the rare anomaly that I now report were in the Royal Victoria Hospital, Montreal, at the same time.

The anomaly consists in the absence of a mesentery for the terminal 6 or 7 inches of the ileum.

My own case was a man, age 33 years, sent up to me as a case of recurring appendicitis.

He gave a history of having had three attacks at intervals of a month or 6 weeks. The outstanding feature in his history was the severity of the pain during the attacks.

He told us that during the last attack, from which he was just recovering, morphia failed to give relief, and that he had been kept under the influence of ether from 11 pm until 6 am the following day.

He referred all his trouble to the region of the appendix, and on admission the right lower quadrant was definitely tender. Seventy-two hours after admission I proceeded to uncover the region of the appendix.

The condition observed on opening the abdomen was most unusual.

The caecum was very mobile, and on pushing it and the ascending colon inwards, the tissues outside the colon were found to be haemorrhagic, ecchymosed, and at one spot the peritoneum was found lacerated.

The appendix was curled up external to the ascending colon, and retroperitoneal.

It was congested. The area external to the colon looked almost exactly

as if he had been kicked with a heavy boot.

The terminal 6 inches of the ileum was sub-peritoneal, the deficiency in the mesentery began in the pelvis in front of the sacro-iliac synchondrosis, about an inch below the brim.

From this point the ileum passes up over the external iliac vein and over the psoas muscle to its junction with the caecum. It was very intimately adherent to the wall of the external iliac vein by means of normal tissue.

There was no sign of inflammatory action.

The appendix was removed: and the caecum and ascending colon were sutured to the outer abdominal wall by three rows of sutures.

So far then has not been any recurrence of symptoms.

The other ease was discovered at autopsy.

The patient had been under the care of one of my colleagues for a condition not associated with the anomaly.

On tracing the small gut downwards, it was found to be free from adhesions or exudate, and apparently ended suddenly at the brim of the pelvis over the right sacro-iliac joint.

On lifting up the caecum, which was markedly dilated, it was found to be very mobile, with a definite mesocolon, and to be apparently disconnected from the ileum. This was due to an anomalous condition of the last six inches of ileum.

The mesentery ended abruptly at the brim of the pelvis over the right sacro-iliac joint, where the ileum became retro-peritoneal and ran posteriorly across the iliopsoas muscle, then turned upwards for nearly three inches, and lay in the groove between the iliopsoas and the quadratus lumborum.

It then reached the posterior surface of the caecum, on which it ran downwards for about two inches to approximately its normal insertion at the ileocaecal valve.

In this manner, with the caecum in its normal position, it ran a course forming a loop with rather a sharp turn or kink at its point of junction with the posterior aspect of the caecum.

This whole loop, when the caecum was lifted up, was completely flattened, and so not noticeable: thus causing the appearance of the abrupt ending of the ileum at the pelvic brim.

Manipulation of the small gut and caecum caused this loop to fill with gas and come into view.

It is probable that the anomaly caused a partial obstruction under certain favourable conditions.

It is interesting to note that since these cases were observed, Professor Whitnall (Anatomy) and Professor Simpson (Histology and Embryology) have found two similar conditions in 50 bodies in the dissecting room of McGill University.

In these latter there was no clinical history, and no evidence that the anomaly had contributed to the death.

The only similar cases that I have found recorded in medical literature were reported in May, 1890, and published by W. H. Bennett, Surgeon to and Lecturer on Anatomy at St. George's Hospital, and Rolleston, Curator of the Museum.

They reported three examples of the anomaly, their attention being called to the condition by the fact that it was: “associated with, and probably instrumental in producing a fatal twisting of, the lower part of the ileum.”

The cases that were observed in the Royal Victoria Hospital differed from those reported by Bennett and Rolleston in the length and mobility of the caecum and ascending colon. In their cases the caecum had not descended into the right iliac fossa, but lay over the right kidney.

Moreover, the caecum was small and of the foetal type.

Normally, the ascending mesocolon of the foetus is flattened against the posterior abdominal wall on the right side, and fuses with the parietal peritoneum.

The posterior layer of the foetal mesocolon and the foetal parietal peritoneum are obliterated and the anterior layer of the foetal mesocolon becomes the parietal peritoneum of the adult.

This fusion of the ascending mesocolon normally begins at the level of the right colic flexure and extends downwards.

In the cases described, this fusion has apparently extended low enough to include the mesentery of the terminal part of the ileum.

A very possible cause of this extension of the area of fusion is the presence in the foetal stage of a 'genito-mesenteric fold' which, by putting traction on the developing mesentery, may cause a fusion of the ileum to the posterior abdominal wall.

Douglos G. Reid describes a 'genito-mesenteric fold' found in 11 of 20 foetuses examined.

It passes from the inferior surface of the mesentery in the right half of the abdomen, forming an antero-posterior septum lying in the vertical plane, and incompletely dividing the portion of the abdominal cavity below the root of the mesentery into two compartments.

The smaller of these is on the right side and contains the caecum, the larger on the left contains the pelvic colon.

The fold is triangular, and has two attached borders (superior and posterior) and one free (inferior).

The posterior border is attached to the posterior abdominal wall along the line of the right spermatic or ovarian vessels.

The superior, or mesenteric, border is attached to the inferior surface of the mesentery, often to a considerable extent.

This attachment to the mesentery is generally exactly along the line of the iliac branch of the ileocolic artery.

The upper part of the fold may persist as the free edge of the duodenorenal ligament of Huschke.

Its lower part may persist in the adult, forming the median boundary of the retrocolic fossa, passing from the ileum or appendix.

It is the commonest cause of a retro-colic position of the appendix.

> *"The fold may also assist in producing adhesions of the duodenum, caecum, and ileum to the posterior abdominal wall. Adhesion in the adult, binding down the terminal part of the ileum, the caecum, the appendix, the mesentery, the meso-appendix, and even the "bloodless" fold of Treves, need not be the result of pathological changes, unless the natural causes we have indicated for the adhesion can be excluded, although a genito-mesenteric fold may not always be seen, even in the foetus."*

I believe that it is generally admitted that the peritoneum does not hold in suspension the stomach, small or large intestine.

The organs within the abdomen arc held in place chiefly by the abdominal and pelvic muscles.

The folds of the peritoneum maintain the organs in their proper relations to each other, but they do not support them at any particular level.

That the caecum and ascending colon are sometimes found dilated and with thin walls is a fact known to all abdominal surgeons.

That their content is abnormally slow in passing the hepatic flexure in a percentage of people is demonstrable by the X-Rays.

In trying to determine the reason for the unusual delay it seems to me obvious that in addition to poor muscular development and insufficient support one must consider the embryology and the nerve supply to the musculature of the colon.

It seems reasonable to assume that in a delayed colon content all kinds of toxic products may result from bacterial action, and one perhaps too readily concludes that **the absorption of toxins is the cause of many of the symptoms indicating imperfect function of the colon.**

Another thought is I think suggested by the part played by the colon bacilli in the production of thyroid secretion.

If it is true that the child before birth gets its thyroid secretion from its mother and only manufactures its own thyroxin after the pancreas and intestinal bacteria begin to operate on the protein molecule one may wonder if imperfect functioning of the colon is as simple a matter as some have thought it to be, or whether with further knowledge we may find it bound up with the subject of internal secretions.

There is another question associated with a loaded ascending colon and colonic stasis. Acute arterio-mesenteric obstruction is a condition that is rather well understood now.

Many physicians and surgeons of hospital experience have recognized it and seen it disappear rapidly under postural treatment.

It is a common experience of surgeons to find, not infrequently, when operating in the upper abdomen, a definitely dilated duodenum.

Sir Arbuthnut Lane noticed it and regarded it as one of the sequelae of colonic stasis; i.e. he thought it was evidence of a chronic stasis lower down.

A couple of years ago I asked Professor Whitnall if he ever found any evidence of pressure upon the 3rd portion of the duodenum by the superior mesenteric artery. He very kindly undertook to examine the bodies in the dissecting room at the McGill University before giving a reply.

He finally repeated that in twenty bodies there was apparent a groove that seemed to indicate that the artery had exercised a degree of pressure on the duodenum during life.

Bloodgood has diagnosed this as a chronic condition in 3 cases, **and relieved them by removing the ascending colon.**

The patients had suffered from vomiting, delay in emptying the stomach with a residuum containing bile and duodenal contents and there was present a dilated caecum displaced into the pelvis.

Bloodgood's idea is that this can only occur when the lower end of the ileum has a very short mesentery. Possibly this condition of dilated and displaced caecum may be associated embryologically with the over development of the genito-mesenteric fold.

The different views here expressed indicate that we have yet much to learn about colonic stasis.

This much can be stated that **removal of the caecum and ascending colon in selected cases is followed by a wonderful improvement in the nutrition of the patient and an increased power of repair and resistance of chronic infections.**

It is a safe operation and one that is not followed by the troublesome adhesions that are sometimes seen after a complete colectomy." - Prof. Dr George E. Armstrong, CMG, MD, LLD, FACS, D.Sc., Associate Professor of Clinical Surgery, McGill University; Surgeon to the Montreal General Hospital, Canada in "The Canadian Medical Association Journal", Vol. XII, 1922.

Chapter 62

Lymphostasis

"We desire to draw the attention of the readers to the leading article of this issue, with the title, **"Lymphostasis or Chronic Rheumatism".**

This is a very important and valuable addition to the fund of medical knowledge. Dr Hans. Froelich, after years of study and observation, is unquestionably in his article as pointed out, the first one to show **the mutual pathological anatomical basis etiology of Hysteria, Traumatic Neurosis, Neuritis, Neuralgia and Neurasthenia with the Chronic Rheumatic condition.**

The name given to this pathological state is surely well selected.

Lymphostasis means obstruction in the lymph channels, and surely with the evidence before us in the article referred to, the point is well taken.

The communication is not only of great value from a scientific stand point but it is presented in a terse, original and most thoroughly interesting way, and we are confident that it will make a profound impression in the field of pathology, and result in the permanent association of the name of Dr Froelich with that name that is expressive of these diseased conditions, namely: Lymphostasis." - in "Medical Mirror", January 1894.

Lymphostasis
A Rehabilitation of Chronic Rheumatism

"**Hysteria and Chronic Rheumatism, are based upon a perturbation of the Lymph System.**

Various causes, too rich food, and correspondingly insufficient exercise, local influence of cold, injuries, can produce a stagnation in the lymph system, which is principally confined to the lymph spaces.

The lymph fissures become extended by this engorgement, and the Grawitz dormant cells provoke a small cellular hypertrophy of the intestinal tissue with deposition of fibrine.

This process is first noticed between the muscle fibrillar and the terminations of the nerves. This is not entirely stopped but retarded flow of lymph causes the nutritive fluid which surrounds the parenchyma of muscle and nerve to be insufficiently renewed, thereby becoming exhausted. This causes a fatigue of the parenchyma, but is not sufficient to create total degeneration.

This same disturbance of the nutrition can take place in the brain or spinal cord.

It is analogous to the interstitial hyperplasia of our large glands, with the single difference that in the latter the parenchyma will in time be destroyed.

This nutritive disturbance of the parenchyma causes the symptoms of:

1. Chronic Rheumatism.
2. Hysteria.
3. Traumatic Neurosis.
4. Neurasthenia.
5. Neuralgia.
6. Muscular Rheumatism.
7. Interstitial Myositis.
8. Multiple Neuritis.

The changes produced are probably of a chemical, not bacterial nature.

The phenomena of the interstitial disease of our large glands are known as hyperplasia of the connective tissue, with pressure upon the parenchyma.

The parenchyma becomes destroyed by this pressure, and more still by the nutritive disturbance caused by the engorgement of the lymph canals; the nutritive tissue retracts, being deprived of its physiological function, which consists in the separation or better isolation of the parenchyma elements in supplying them with nutritive fluid and in renewing the effete matter.

I do not wish to mention here **the Toxico-Chemical causes of these interstitial processes**, but rather to accentuate this point, that with such patients there is always too rich a supply of food with too little combustion, caused by insufficient peristaltic and voluntary motion.

These circumstances, single or combined, then cause an engorgement of the concentrated lymph, which condition is first noticed in the fissures and tissue spaces, the source of the lymph system.

Our treatment of these diseases proposes to remove by the reviving of the peristaltic motion the results of the engorged lymph.

This is reached to a certain degree, as the aperients administered in the first stages of the disease give at once a passing relief.

Why should these elementary pathological conditions not be active out side of our large cavities and intestines?

We have everywhere the same anatomical physiological basis, parenchyma elements, which are separated from each other, nourished and drained by connective tissue, only that here the place of the parenchyma is taken by muscle fibers and nervous tissue.

We certainly have these engorgements just as well there as inside of the cavities, not only much more frequently, but more extensively.

The prototype of this process of small cellular infiltration and deposit of fibrine is found in any contusion; the same has been proved for the so-called chronic interstitial myositis, accompanied by rheumatic swellings.

The only hypothesis which I make use of here consists in the conjecture that **the**

same nutritive perturbation can and must be supposed to exist, for the peripheral nerve terminations there, as where it has been already proved, for the muscle fibrillae, we cannot logically separate them from each other.

The flow of lymph in our intestines does not surmount the same obstacles as in the trunk or the extremities.

We have 3 Continual Motors in our large cavities, which are independent of our will-power:

1. Circulation.
2. Respiration.
3. Peristalsis.

Which exert a permanent influence upon the motion of the lymph.

Respiration and peristalsis operate upon the centripetal motion of the lymph by aspiration.

Each motion of the diaphragm calls for an expansion of the thorax, the same contraction of the diaphragm communicating itself coincidently to the stomach presses upon its volume, the walls of the stomach contract, for ward its contents, and the peristalsis moves on quietly and permanently to the anus.

The 3rd motor in our body is the heart.

The passage of the plasma through the stomata of the blood capillaries to the fissures of the connective tissue must be regarded as a product of secretion of the cells of the blood capillaries (Heidenhain).

This motion is in part a filtrating pressure, but is principally cared for and upheld by the amoeboid motion of the leucocytes (Cohnheim).

This plasma keeps up the nutrition of the tissues from these fissures, wherefrom the necessary nutritive substances are selected by the tissues.

The effete matter is led back to the fissures and is conducted to the lymph capillaries, which forward them to the venous ways (Landois).

The elastic fiber which takes the place of the amoeboid motion of the leucocytes at the beginning of the lymph capillaries, and furthermore the horror vacui, forward the lymph to the cavities of the abdomen and chest.

It, therefore, evidently takes very little to stop this very feeble current of the lymph from the blood capillaries to the lymph capillaries, be it, for instance, in the large cavities a retarding of the peristalsis as it happens in habitual constipation, or outside of the intestinal cavities in sufficient exercise of the muscle.

Such as chronic engorgement of the lymph current has the following con sequences: the sluggishness or complete stoppage of the passage of the lymph extends back to the fissures, the effete matter of the parenchymatons tissue cannot be carried off to the kidneys to be removed, but accumulates around the elements of the muscle and nerve parenchyma; instead of furnishing nutritive fluid for the parenchyma this fluid becomes exhausted and the parenchyma suffers from an

intense disturbance of its nutrition, which can reach exhaustion, though hardly results in complete degeneration.

But this chronic nutritive disturbance suffices to injure their function in a high degree. This nutritive disturbance is one important consequence of the engorgement of the lymph.

B. Grawitz has demonstrated that in all progressive disturbances of nutrition not only the fixed corpuscles of the connective tissue become active, but his dormant cells awaken from their "sleeping- beauty" condition, turn mobile, and a small cellular in filtration is established before a leucocyte immigrates.

This infiltration is soon augmented by the presence of fibrine.

How does that come to pass?

Excessive active (as with the mountain disease) and passive motions thicken the blood; want of exercise thickens the lymph. The blood adds in its capacity of a supply current, albuminates, fats, salts, carbohydrates to the tissues; the lymph brings the excrementitious products, urea, CO2, H2O, and salts to the secreting organs.

This effete matter returns, if these secreting organs are not competent for removal. Patients of this kind not only suffer from want of exercise but they add more food to the blood than it is able to accommodate, consequently the concentration of the lymph is being favoured and we have a plethora hyperalbuminosa.

But that does not suffice for the explanation of the deposition of tibrine from the plasma. We know that fibrine precipitates on the degenerated walls of blood-vessels. That may be the case here, as the tissures and capillaries filled up with the small cellular infiltration may be regarded as such.

A. Schmidt has demonstrated that there are changes in the blood; real diseases of the blood, in which the physiological exchange of the white blood corpuscles seems to be exceedingly increased, and the products of the circulation accumulate in the blood.

The consequence is, the appearance of spontaneous coagulation within the organs of circulation. The supposition is not unwarranted, that the same is the case with the lymph, at least I wish to explain in that way the formation of lymphangitis which is often noticed in chronic rheumatism and which causes, usually, an increase of temperature.

We find with each increased hyperplasia within the connective tissue an increased dissolution of leucocytes which raises considerably the contents of fibrine in the lymph.

In consequence of the dying off of leucocytes which give off nucleo-albuminates to the plasma, these nucleo-albuminates join the carbonate salts of the plasma and act in this connection as ferments.

According to Lilienfeld, the leucocytes contain a substance, the nucleohiston, which can be spit into nuclein and a coagulable albuminate, the histon.

This nucleo-histon possesses the important quality to keep the blood-fluid, if introduced into the circulation, or added to the blood gotten by venesection.

On the other hand, the coagulation of the blood is an effect of the leucocytes, especially of the nuclein, which is contained in them.

Both substances, the coagulation causing and coagulation-preventing, are connected with each other in the nucleo-histon.

The so-called histoplasma, which remains fluid after the addition of nucleo-histon, becomes coagulated, nucleo-histon, derived from leucocytes, is added, even if the nuclein solution has been boiled.

If one adds a nucleo-histon solution to a fibrinogen solution, there will be no coagulation until after addition of a dissolved carbonate salt.

Thus the carbonate salts confer upon the nucleo-histon coagulation-causing qualities, and the fluid condition of the blood is tied to the chemical presence of nucleo-histon, but each time nuclein will be made free if the substance splits, and will become coagulation-causing.

In the same manner Pekelharing finds that the fibrine ferment is a carbonate combination which is able to confer carbonate upon fibrinogen and thus to produce from the soluble fibrinogen an insoluble carbonate holding an albuminous body.

(A. Schmidt, Zur Blutlehre, Leipzig, 1892; L. Lilienfeld, Haematolog. Untersuchungen, Archlv. r. Physiol., bel Dubois-Raymond, 1892; A. G. Wright. The Lancet, 1892; V. A. Pekelharing. Die Bedeutung der Kalksalze fuer die Gerinnung dles Blutes, Virchow's Festschrift, 1892; Hammerstein, Green, Rossel, etc.)

Another cause for coagulation of the lymph is the influence of cold.

Thrombi originate interstitial hyperplasias, which are caused probably by the increased destruction of cellular elements in the much refrigerated blood (landois).

Or these cellular elements with fibrine attach them selves to the walls of the lymph-vessels and cause a lymphangitis which is often noticed with rheumatism.

After having seen how fibrine may be precipitated we must follow up its further behaviour.

"Restitutio ad integrum" can take place if this formation of fibrine soon ceases; but if some time passes before that takes place we will have subsequent precipitations at other places, the older ones getting dryer, hard, by absorption of the gelatinous plasma, the small cellular infiltration continuously disappears and a more or less organized substance is formed, similar to cicatrized tissue.

Since there is not much space for expansion in the intraparenchymatous tissue the fibrine connects the various muscle fibrillae with each other.

The same process probably takes place within the nerves when partial hyperplasia of the neuroglia causes pseudo-neuromata to develop, as I observed once, in great numbers on the nerve cruralis. In time the afflicted muscles become harder, shrink, but never atrophy completely to my knowledge. Such muscles feel, if you palpate them with a moist finger, uneven, but transversely ribbed.

Of more importance in their influence upon the function, by connecting the tissues, are the precipitations of fibrine between muscles, nerves, faciae, vessels, bones and mucous pockets. They occur very often and may reach the size of a halved goose egg underneath the muscle.

They cannot be shifted from the femur and seem to be situated directly upon the periosteum. These swellings feel elastic where they are superficial and often simulate fluctuation, but seldom are oedematous.

They reach their largest size underneath the tendons because probably the motion of the body of the muscle hinders their expansion. If located between muscles it is natural that these swellings exert an extremely disturbing effect by their pressure upon nerves, muscles and vessels.

Their most deleterious effect is developed by their connecting all surrounding tissues, so much so that, for instance, the muscles of the thigh cannot be distinguished or separated. It is evident that the skin and the subcutaneous tissue which have no contractile property are at tacked first.

The skin therefore is so closely attached to the underlying muscles that it can absolutely not be raised in folds. If now, for instance, such patient desires to extend his leg its stretched muscles are fastened to their antagonists, the flexor muscles must be moved with them.

The motion pulls the adhesion of the antagonists, causes therefore pain, and at the same time the intended motion is poorly, slowly and imperfectly executed.

The more the adhesion of the antagonistic muscles increases, the more insecure and deficient will be the motions, until at last complete invalidism results.

Where these swellings are undisturbed, as underneath the Tendo Achillis, they will ossify and form Virchow's Hyperplastic Osteomatas.

These ossifications can occur anywhere with increasing invalidism; they have for many years been recognized. It is the interstitial tissue out of which the bone grows. Wherever there is interstitial tissue, bone may develop in the neurolemma, periosteum, etc. (Koester, Berl. Klin. Woch. p. 187, 1893)

These hyperplastic osteomata are especially noticed on the extremities.

They can only be considered as exostoses after Virchow, as an exostosis is a hyperplasia of osseous substances of a normally existing bone.

Unfortunately Virchows original treatise is not at my disposal and I make reference here to Dr. Kreiss, Primare Sehwielige Myositis, No.51, Berl. Klin. Woch., 1886.

Dr. Kreiss' s observation of the formation of these ossifications harmonizes completely with my view and experience of the influence of the atmospherical conditions upon the formation of these indurations, and I am corroborated by the anatomical researches of Mays, who says that the pathological process takes its start from the interstitial tissue, the tendons, fasciae, the intermuscular connective tissue, the periosteum; in fact, the seat of these ossifications extends far over the muscular system.

I never saw such in the subcutaneous tissue, still the hyperplasia takes place there too and can accordingly, theoretically, lead to ossification.

In the blood-vessels there are less disturbances, more, however, in the nerves.

We can have all possible: Anaesthesia, Hyperaesthesia, absence or increase of Reflexes; all the symptoms of Pressure, including Strangulation, occur in connection with defective nutrition of the nervous parenchyma, through engorgement of the nutritive plasma.

It is certain that the latter cause is far the more frequent. Pressure upon the nerves usually involves pressure upon the near arteries and veins.

Oedema is not often noticed, and I never saw engorged veins or varices which would result therefrom. So the parenchymatous disturbance of the nutrition remains the principal circumstance. I wish to accentuate here that the more I recapitulate my cases the more I feel convinced that the brain nerves are relatively seldom involved; that it is mostly, with few exceptions, the spinal nerves down to nerve coccyges.

If there are neuroses of the brain nerves or nerve sympatheticus, they are originally caused by irradiation. The symptoms of the brain, if they are really caused there, are to be attributed to the nutritive perturbations which are caused by the pressure of indurative swellings of the neck upon the lymph canals passing down from the brain.

Fatigue, with temporary narrowing of the field of vision, of neurasthenia, must be supposed to be based upon engorgement of the lymph canals in the cortex of the occipital lobe.

They behave exactly as they do in the muscles, nerves, etc., of the trunk and extremities; that is, the perturbation of the nutrition is not severe enough to leave a fatty degeneration of the nerve elements and to render possible a pathological anatomical preparation, but they are important enough to cause a considerable restriction of the function.

The Joints

Chronic rheumatism of the synovial membrane is exceedingly rare.

The appendices, ligaments are usually afflicted, the mucous pockets are much swollen, but the joint proper is seldom the seat of this affliction, and if it is, then acute rheumatism has preceded it, or a scrofulous diathesis is present, which is elsewhere exhibited. The ligaments are far more susceptible, and also the periosteum, and I especially mention the tibia, the out side of the calcaneum, femur, humerus, a few places of the skull, and the sacrum.

The cellular hyperplasia of the periosteum imparts a particularly velvet-like sensation to the finger.

The lymph canals exhibit an interesting phenomenon. They thicken by precipitation of fibrine in a centripetal direction, they are easily felt as hard round strings of varying thickness, often interrupted by nodules or protuberances like a rosary.

Usually, after some imprudence or exposure, a little increase of temperature sets in, excessive, objective and subjective painfulness demonstrates the area of a

lymphangitis on an extremity or the neck, but hardly where there are not some fibrine deposits in the periphery. By and by the soreness leaves, and perhaps the strings too.

Ordinarily it remains, collateral lymph-ways form and fill up again and so on, until whole tumors of such accumulations of obliterated lymph canals are established, as it is especially in the case of fat women, on the inside of the knee, on the adductors, and outside of the trochanters.

A like condition results upon the region from the hip bone to the loins and on the angle cl the pectoral is major with the humerus.

So we have the acute closing up of a lymph-canal by the formation of thrombus several inches in length, from acute feverish lymphangitis, and the chronic gradual narrowing of the lymph-canal's lumen by successive precipitation of fibrine.

The latter process is the rule, and explains the objective and subjective feeling of coldness in the limbs of such patients, as the nutritive fluid is not often and thoroughly enough renovated.

The influence of the weather upon rheumatic diseases is known by the popular name “The Rheumatic Barometer.”

I made observations for a full year and found that the temperature has little influence if the patient can protect himself from local influences of the cold by proper clothing. But as soon as the barometer fell and the humidity of the air reached a certain degree, I heard from my first visit in the morning until late at night everywhere the same lamentation, neuralgias, nervous feeling, etc.

This harmonizes with the paroxysmal character of neuralgia, hemicranias, neurasthenias, etc. I wish to state in explanation of this phenomenon the following: Our body, with all its tissues, is hygroscopic. If the weather is nice, the air dry, we give off considerable water to the air, and thereby our tissues and the whole body will shrink.

As soon as the barometer drops and the humidity of the air reaches a certain degree, the body gives off no water to the air, and all our tissues swell up.

Everybody has had this experience with tight shoes, which he can put on very well in good weather, but hardly in bad weather.

Upon this swelling of the tissues, too, is based the depressed or blue feeling of otherwise healthy persons, the flow of the lymph off the brain is retarded, the brain parenchyma hungers and its function is lowered.

Now, the rheumatic indurated or Froriep's swelling is subjected to the same laws.

With increasing humidity of the air they swell and press upon the nerves, if such are near.

There are very few exceptions to this rule, and these are based upon the location and shape of the swelling. A very marked influence is exerted by an air which is charged with electricity, as before great storms.

It incites rheumatics to the climax of pains and nervonsness.

It is astonishing, indeed, that the atmospheric perturbation can be thousands of miles away and still exert its influence.

The appearance of these deposits of fibrine in our body is nearly always symmetrical, usually more accentuated on one side of the body, which is perhaps in connection with the innate and educated predominance of one-half of the body.

They are always in the same places, evidently "loci minoris resistentiae", which are afflicted.

The whole process is of a chemical-physical nature. We have the same process in each injury; for instance, the fracture of a leg, not only the lymph canals of the periosteum, those of all the fleshy parts in the line of the fracture are lacerated and contused.

We see the formation of the same small cellular infiltration and deposits of fibrine which glue the concerned tissues together, and it takes often months after the callus has formed till the whole circulation is established again.

But for a long time to come these patients complain about the rheumatic pains in the fractured leg, especially if the weather changes. This process is a prototype of a traumatic neurosis.

We cannot suppose that a parasite put up its wigwam there.

Further, we would expect that certainly the lymphatic glands would be swollen in an affliction like this, where only the lymph is perturbed like it is in syphilis, tuberculosis, carcinoma, etc., but I never noticed a swollen gland, and the bodies, which might be regarded as such, always proved to be rheumatic swellings and were in unusual places.

Examination

Persons who have swellings in their muscles present thickened patches upon the skin, excessively painful upon pressure.

The skin swellings feel peculiar, and when one rubs them it seems as if there were several sheets of moist sheepskin between the hands.

Any morbid change will be noticed at once and painfully by the patient.

This pain is described as being different from the sensation felt in normal tissue.

This pain is caused by the tearing of the numerous adhesions.

Healthy tissue never feels painful by hard, but even, pressure.

The Different Kinds of Diseases

Which form the pathological manifestation of this hyperplasia of the connective tissue and of the engorgement of the lymph.

Chronic Rheumatism has feverish exacerbations only, if mild or severe lymphangitis augments an attack, and then often with a hardly perceptible rise of the temperature. The acute rheumatism is in the same casual relation to the chronic as gout (arthritis uraei).

Hysteria and the Hyperplasia of the Connective Tissue

What is hysteria:

"Whatever is not subject to ordinary rules is considered hysterical."

Leyden correctly says:

"It is nowadays one of the most important and difficult problems to decide how far a local ***disease influences the whole organism****, or the reverse; how far a thorough affliction of an organism produces a local disease* ***or influences it.****"*

I wish to add to these words, that we ought above all and always to trace back a disease to a pathological change of the local anatomy.

We always see the endeavour to transmit the cause of the hysterical symptoms to the central nervous system, though the result of the post mortems is totally negative. One says, hysteria is based upon imagination.

Do not even physicians imagine all possible exotic diseases if some thing ails them, notwithstanding their knowledge?

Is imagination really morbid, for instance, with a child when playing?

Then only idiots and stupid ones are healthy, for each man suffers from imagination and it is really only imagination which makes life worth living.

Another appeals to the Psyche; calls it psychosis.

I do not speak here of that hysteria which might be rather called educated naughtiness, and does not belong to the sphere of the physician, but I include all other hysterical symptoms, if I say that they are caused by defective nutrition (or perhaps pressure upon) of the spinal nerves caused by hyperplasia of connective tissue and engorgement of the lymph.

They are caused either directly by the spinal nerves or communicated by their anastomoses with the nervous sympathies and the brain nerves by irradiation.

Those symptoms of the brain and spinal cord which appear in the course of a hysteria, and cannot be attributed to irradiation, are caused by the same parenchymatous nutritive disturbance of the central nervous system.

In order to show that neurasthenia and spinal irritation owe their appearance to the same phenomena, I will briefly discuss the traumatic neurosis.

First it was called "railway spine" and one investigator distinguishes, as in German railroad coaches, 3 classes of traumatic neurosis. (G. Roth, No.9, Berl. Kl. Wock. 1891)

Here a case recurs to my mind which I had years ago.

A railroad official went one Sunday morning after breakfast to read his paper where many others read it. Suddenly his seat gave way and he fell with it, "dans le consommiee".

He injured the muscles of his back and I treated him for neurasthenia.

It was not railway spine, though he was a railroad man.

Could I call it on account of the circumstances "water-closet spine"?

It is evident that railroad men are exposed to more contusions of the muscles than others, but not all wounded railroad men turn neurotic or asthenic from it.

I had the same experience with soldiers who were near an exploding shell and without having received visible injury or contusing, suffered intensely from shock.

It is probable that powerful concussion, fright (tire), etc., increase first the function immensely, but after wards exert a very exhausting influence upon our nervous system, being comparable to a telephone box which was struck by lightning and burnt out.

I admit that sudden or lasting great demands upon our thinking, feeling or will-power may cause identical conditions in the parenchyma of our peripherical or central nervous system as any injury does, or any engorgement of the lymph from other causes.

The organ incited suddenly to the highest capability surrounds itself with more effete matter than can be removed by ordinary conditions, and the commencement of a chronic engorgement of the lymph occurs.

The many accidents from false switching, for instance, are caused by too long working hours and fatigue of our central nervous system.

We have the "insufficiency of the higher nerve centers against functional over loading" (Friedman).

The traumatic neurosis is otherwise a very good expression.

Roth says:

> *"In the first class, the typical railway brain, objective symptoms can be entirely absent. We notice be sides the well-known neurasthenia, irritative symptoms, vague pains in various parts of the body. They are most pronounced along the vertebral column."*

Those who travel second class have "painful sensations in various parts of the body besides increased irritability", as above and functional disturbances of the Psyche.

Roth mentions the hysteric stigmata, hemianesthesia and functional disturbance of the sensory nerves, retrenchment of the field of vision, without patients complaining of it.

In the 3rd class pure functional neuroses combine with organic changes of the brain and the cord.

He cites 2 cases of traumatic neurosis upon which a post mortem had been made and which exhibited arterio-sclerosis with spotted white degenerations of the medullated nerve fillers of the trunk of the nerve sympathicus.

I will demonstrate later that all these symptoms of Traumatic Neurosis are identical with those of Chronic Rheumatism.

If I knock my elbow against something, there will result for several minutes a

numbness of the ulnar side of the forearm and hand, and I feel perhaps sick at the stomach from irradiation of the nerve vagus.

Roth will notice, if he investigates, that these painful places along the vertebral column pass to the atlas, and that such patients suffer from disturbances of the sense of taste.

I have at present a patient who with each rheumatic attack is afflicted with an eruption of blisters on the lower edge of his tongue and soft palate.

He has on the same side a rheumatic paresis of the nerve facialis.

For a long time I took these for dyspeptic symptoms, but stomach and nutrition were always in first-class order.

Sometimes a trauma gives the starting point, or, what is more probable, an already existing but latent stasis of the lymph system is more accentuated by a trauma.

Sometimes we see the same pathological condition without accidental trauma.

The polyneuritis, or multiple neuritis, which distinguishes itself by really being no neuritis at all in the true meaning of the word, Eisenlohr (Berl. Kl, Woch., No. 42, 1889) demonstrated, in 9 cases, that in no case the localization of the paralysis corresponded with one or several nerves.

Brain nerves are in tact and never complicated with psychical symptoms. Reflexes of patella in 7 cases extinguished, in 2 reduced but returned.

Eisenhlor description is identical with the one I give for chronic rheumatism.

The pathological cause of polyneuritis is the same as that of hysteria, traumatic neurosis, chronic rheumatism, a disturbance of the nutrition of the termination of the nerves, with the sole difference that the affliction extends over the whole body and is more grave, with a predominance perhaps of the neuralgic character.

Now for a Name for These Diseases which have artificially been torn apart, Though they Exhibit the Same Pathological Phenomena

"We must deal with a rheuma, a real pure rheuma; we cannot find a better designation and one more to the point, than that of chronic rheumatism.

If one desires a classification he may distinguish:

1. Chronic Idiopathic Rheumatism
2. Chronic Traumatic Rheumatism
3. Chronic Asthenic Rheumatism

All caused by the same Lymphostasis.

The symptoms of the Hyperplasia of the Connective Tissue on the different parts of the body.

You have the choice of the symptoms of:

1. Neuralgia.
2. Neurasthenia.
3. Hysteria.
4. Neuritis.

And will always find the symptoms in an affliction of the same parts of the body. I wish especially to state here the paroxysmal appearance of these symptoms which always coincide with a cold (change of weather), which so much influences the lymph or a local inflammation.

We can almost always find so-called painful points of pressure, especially along the course of the spinal nerves, and of the 5th and 7th cranial nerves.

These points are spread over the whole roof of the skull.

There are normally impressions on the skull which are not particularly painful on pressure, but if we have to do with a neurasthenic rheumatic, we feel round for soft swellings which, on pressure, cause the most intense pain and hemicranias (headache).

Such points are on each side of the occiput above the parietal protuberance where the nerve occipitalis emerges and on the insertion of the muscle temporalis.

Larger parts of the aponeurosis may be painful, and in connection with it the muscles of the neck may be sensitive; usually there is more accentuation on one side of the vertebral column than on the other.

The ligaments between the processes spinosi show pain upon pressure.

The skin of the neck is of ten connected with the underlying tissue.

The angle of the jaw and the insertion of the masseters, the for a men supra and infra-orbitale, the chin, the whole course of the carotid and the perichondrium of the larynx can be extremely sensitive down to the plexus brachialis and the feeling finger always finds on the painful places abnormal, particularly slippery swellings.

The hemicranias are particularly cared for by the nerve occipitalis.

Irradiations can be voluntarily provoked upon the nerve vagus.

The peripheric nutritive disturbance of the nerve trigeminus can cause, be sides the well-known neuralgia, paresis in connection with the radiating branches of the nerve facialis in the pes anserinus major and minor. I saw in this connection itching of the nose, or eruption on the diseased side of the tongue with vicariousness of taste, dryness in the mouth, but always in connection with cold or change of the weather.

That there is no central affection of the nerve facialis is clear by pressure upon the painful points, and the fact that cure is always effected by absorption occasioned by massage and electricity.

In the cases where it is stated that the neuralgia ceases after stretching or resection of the nerve, we may suppose that by the interference of the operation

the hyperplasia of the connective tissue has been absorbed or has been removed.

I believe that the numerous catarrhal and other inflammations of the throat establish engorgements of the lymph, and hyperplasias of the connective tissue about the neck and throat.

Pressure upon the nerve cervicalis, especially along the muscle sternocleido-mastoideus, provokes shooting pains in the hand, sometimes ructus, singultus, sick stomach, and even angina pectoris.

The upper border of the muscle cucullaris shows very often large, oblong swellings.

Afflicted ligaments and muscles around the vertebrae may cause pseudo-ankylosis (the deposit of too great amounts of calcium in portions of the structural body; hands, wrists, elbows, shoulders, feet and toes, ankles and knees).

On the upper arm the nerve brachialis to the condyle internus is often very sensitive.

This is caused by lymph canals which are obliterated by lymphangitis and which may be followed up the forearm and often have a nodulated indurated outline.

The skin above the muscle deltoideus is connected with the latter, very painful, and underneath the ligaments of the shoulder are often attacked.

The same remark may be made of the muscles of the forearm and the hand and finger-joints.

The dorsal side of the intercarpal spaces is usually diseased, especially in writer's cramp.

The vola manus seldom takes part.

The pseudo-ankylosis of the joints are usually caused by affection of their nearest surroundings.

Jurgensen puts up the following painful points of the upper extremity:

1. Axillary point, responding to the position of the plexus.
2. Humeral point of the nerve axillaris back of humerus.
3. Median point in the elbow.
4. Ulnar point on cond. int. and again on the hand.

On the thorax we meet with affection of the pectoralis major (inastodynia), giving an exceedingly coarse sensation.

Passing to the fossa axillaris I saw, a pretty hard swelling connected with the skin, often of the size of a fist, which consists as elsewhere of a mass of thin round strings which evidently obliterated lymph collaterals.

The 12 dorsal nerves are often the seat of rheumatic affection.

With the intercostal nerves the vertebral points are less affected, corresponding to the exit from the forearm intervertebrale than the lateral points, which correspond about to the middle point between the vertebral column and sternum, where the ramus perforans pierces the muscle.

There are especially to the left of the mamma swellings larger than a dollar.

They are easily found if you pass your finger with moderate pressure between the ribs above the intercostal spaces from the vertebral column to the sternum.

These intercostal spaces feel slippery and ribbed and are very painful. This is the seat of the intercostal neuralgia, which in its higher type, where it is not caused by vitium cordis (organic heart defect), is called angina pectoris, and further down asthenic dyspepsia.

I have seen no patient who did not ascribe these pains to the heart or the lungs.

The heart undoubtedly is sometimes affected indirectly by irradiation and causing palpitation, or directly with intermitting action on account of fatty degeneration. The symptoms from the heart disappear first under treatment.

Pressure upon these places can cause ructus (ventilation of the stomach via the oesophagus, belching), singultus (hiccups), yawning, inclination to vomiting, but only in protracted cases.

The most diseased part is usually down from the first lumbar vertebra, on both sides of the proc. spinosi over the whole sacrum to the end of the coccyx.

The diameter of the hyperplasia may be several inches on the saerum with single swellings of the size of a walnut. Pain is intense as if the back would break in two (lumbago).

The nerve ileo-hypogastricus and ileo-inguinalis cause the visceral neuralgia which has its seat only in the abdominal walls, but is referred by the patient to the inside and is perhaps sometimes removed in the form of a thoroughly healthy ovary. From the crista ilei down to the sacrum there is again a favourite place of obliterated lymph collaterals.

The coccyx with the nervus coccygis is noted for coccyalgia.

The resection of the coccyx for neuralgia is just as necessary as the use of the guillotine for headache. This place is of ten very painful but yields to treatment.

On the upper thigh an adhesion of all muscles mutually and with the skin is no rarity.

Half and totally obliterated lymph canals in old cases are found with large swellings seemingly attached to the periosteum. The part underneath the nerve glutei directly upon the pelvis is the seat of sciatica and not the nerve ischiaticus, though the latter is sometimes diseased.

The mucous pockets of the knee are often afflicted and are conspicuous by their large swellings. They are often mistaken for gonitis, but careful investigation of the patella shows the knee-joint properly intact.

They hardly ever suppurate. I have seen one case where suppuration followed.

Rheumatic swellings never suppurate, except after great injury.

If the synovia is diseased there will be found fibrous and osseous precipitations upon synovia and patella with floating bodies, which cause a loud rattling noise.

The lower part of the thigh behaves like the other parts, particularly in the behaviour of the tibia. The passing finger feels, in fresh cases, uneven, small protuberances, in older cases, the hyperplasia of the periosteum is velvet-like; the massaging of it causes the unenviable feeling of rubbing the raw flesh with sand.

The Achillodynia which Albert (Wien. Med. Zts., No. 2, 1893) described can often be seen, it is a hyperplasia of connective tissue of the vagina tendinis at its insertion, and results in adhesion with the underlying tissues, which renders the whole muscle immobile and puts the foot by its contraction in pes equinus position.

It has nothing to do with periostitis as Pitha thinks. Like Leo Bosenthal.

I was never able to find neuroma there, but I have found particles of fibrine of the size of a pea. The hyperplasia of the vagina tendinis is often so great that it projects beyond the tendon and the latter looks as if embedded in it.

Here belongs the case of Kussmaul's clinic which has been described by Kreiss in No. 51 Berl. Kl. Woch., 1886, as primary indurated myositis.

It is a common case of chronic rheumatism.

While the inside of the calcaneum is very seldom diseased there often is involvement of the periosteum of the outside which forms usually the terminal station of the sciatic telephone.

The only participation of the foot joints are irresponsible swellings which originally represented spontaneous hernias of the synovial membrane caused by injury, but which were separated later.

The dorsal skin of the foot rarely becomes adherent though these parts are some times diseased, but more in the metatarsal spaces, which differ from the behaviour of the metacarpal spaces in that they go down through this space to the ball of the foot, probably because the metatarsal bones oppose expansion more than the metacarpal bones.

There are cases where absolutely nothing more is affected than these interstices.

One notices a slight swelling on the dorsal side, especially of the first metatarsal space; there seems to be nothing strange on the ball of the foot.

That this alone cannot be the cause of the exceedingly painful walk of the patients is evident; they walk with great effort, with 2 canes, as if they were on needles.

But if you look at it more carefully you will notice that the ball of the foot is enlarged toward the toes, the line of demarcation which is normally between ball and toes, is often removed to the first toe joint and it looks as if there were webs between the toes.

Simultaneously the capitula metatarsorum are exceedingly painful upon pressure.

These afflictions are more frequent in men than in women.

The ligaments and muscles of the planta show in general rheumatism, the same symptoms which we notice in inflammatory flat foot, or in torn ligaments from accidents, painfulness of the football and along the outside border of the foot with a culminating point on the prominence of the base of the fifth metatarsal bone.

Electricity is of great advantage, especially the constant current, to stop the beginning of degeneration of muscle and nerve elements. But that is all; without accompanying massage it is not of much use.

Internal Treatment

Chronic rheumatism offers 3 indications:

1. The first indication has the purpose of working against the changes of the blood, which are the result of the disease. A. G. Garrod (Lancet, Royal Med. Surg. Soc., 13 February 1892) examined the blood of eighty rheumatics during their disease and arrived at the following conclusions:

> *"An attack of rheumatism is always accompanied by a considerable loss of red blood corpuscles, which appears in the beginning of the attack. In prolonged attacks there is no progressive decrease to be noticed, still their number remains on the same low average, whether there be any fever or not. The leucocytes are at the same time immensely increased. As soon as the attack is over the red corpuscles augment astonishingly fast and these changes give us a much better picture of the states of the disease than the temperature curve. The anaemia of rheumatism is either an acute oligocythaemia, from which rapid recovery results, or a more chronic pseudo-chlorosis, the latter in few cases. The higher the fever the more leucocytes, but in sub-acute cases also there takes place an increase of them, likewise of the number of the blood platelets. We see by that that iron is properly indicated."*

2. The second indication for treatment of chronic rheumatism consists in exploring the causes of the engorgement of the lymph and to remove them. The cause of this may be in the want of exercise.

The lower extremities must be well exercised in all their motions, if the lymph is to be forwarded from the legs to the abdomen and from there further up. This extremely quiet mode of life thus regulated has, of course, its influence upon the peristaltic motion of the lymph of the intestinal cavities does not give place to that of the limbs.

Stagnation in the trunk and extremities follows and plethora hyper-albuminosa in the glands and organs of the cavities results. The plethora of the uterus causes the formation of numerous leucocytes and leucorrhoea with all its peri and parametritic processes. The overcharge of the lymph and blood with food which, of itself, or combined with want of exercise and occasional cold, offers the basis of disease. Physically it is right that the stagnation first originates where the lymph remains longest, which is in the remotest periphery of the body, the feet and hands. We see how important a factor is the peristaltic motion, for as soon as the bowels are opened we have a relief of the symptoms.

Constipation accentuates them. Therefore, keep the bowels open.

Cathartic can be administered alternately with iron, even to well nourished persons. The treatment is very severe and improvement of the fluids of the body is imperative.

3. We have a remedy to satisfy the third indication and to wash away the fibrine formation, that is the methodical use of much hot water connected with diuresis.

Here is the way to the often surprising successes of the thermes, as it is surely not alone the hot water which is responsible for the beneficial effect, but their slight content of alkalies too, as I had opportunity to notice at the

Hot Springs, Arkansas. A weak solution of alkalies, especially sodium sulphate, is known to dissolve fibrine. I will have occasion to publish my unfinished experiments which are in the line of introducing a solution of sodium sulphate in hot water into the swellings.

This treatment, with quantities of hot water is also necessary, because the principally mechanical treatment physiologically thickens the blood and increases the lymph, so much so, that continued passive motions kill an animal on the spot by thickening of the blood. (Landois)

The above quoted treatments may produce a passing improvement, but have little permanent success if not connected with thorough massage, passive motions and Swedish exercises.

Tears off the adhesions and removes the swellings by pressure. It takes strength.

I do not hesitate to state that sometimes in completely atonic cases of fibrous degenerated muscular tissue of desperate old cases, I even produce contusions, to revive the circulation. It is evident that the tearing off of adhesions causes severe pains which, however, give way very soon after a few weeks.

The treatment is of long duration, but always satisfactory, because always improving the patient and, if continued long enough, curing him.

An instructive experiment by Dr. Zabludowsky (Die Bedeutung der Massage, Berlin, 1883) which shows how the elements of our tissues saturate the surrounding nutritive fluids with effete matter and get fatigued, and how they regain their functions by removal of the lymph by massage and so making place for new fluid.

> *"A person raised a weight of 1 kilo. 840 times in intervals of 1 second by maximally bending the elbow joint from the table to the shoulder upon which his forearm rested. Later he was not able even after hard effort to do anything. After I had massaged the young man's arm for 5 minutes he was able to raise without effort in the same rhythm as before, the same weight 1,100 times."*

This treatment has to be changed in some way in cases of neurasthenic rheumatism where there are decided signs of parenchymatous disturbance of the nutrition of parts of the brain.

We must then also remove the accumulated effete matter by massage of the neck with passive motions of the latter. If we add general deep massage of the whole body we improve the composition of blood and lymph better than with anything else, though it is usually simultaneously necessary for the removal of

the complicating rheumatic swellings in other parts of the body which almost always accompany cerebral neurasthenia. The methodical use of fruits as they are prescribing grapes in Switzerland, is the best to keep up peristaltic motion.

Stimulants are splendid, if used to rally his sinking strength for the benefit of his patient, but otherwise no, most emphatically, no.

Mental and other kind of work must be mild and not too uniform.

If the cares and worries of business exhaust the cells of the brain, let the man rest.

Neurasthenic Melancholia

It often accompanies severe cases of rheumatism and is evidently based upon the same disturbances of parenchymatous nutrition of the responding parts of the brain.

Its treatment is always successful, not by psychical treatment but by general massage, especially of the lymph canals of the neck in connection with the use of drastics (purgatives).

We may also expect to give an impulse for judging differently and treating more successfully those mental diseases, which are based upon neurasthenic disturbances." - Dr Hans Froelich, MD in "Medical Mirror", January 1894.

The Stagnation of the Lymph and its Consequences

"I wish to add my share to education of our people and physicians about health-resorts by turning my search light upon new ways, and means and indications.

In an article on Lymphostasis, I showed that chronic rheumatism, neuralgia, traumatic neurosis, hysteria and neurasthenia have one and the same pathological anatomical basis, that is the stagnation of our nutritive fluid, the lymph, and its consequences.

Each functionary cell or fibre of our parenchymatous tissue, nerve, brain, muscle, etc., is surrounded and separated from the next cell or fibre by a stratum or layer of connective tissue.

The nutritive plasma or lymph is being percolated by a permanent motion from the arterial capillaries into these connective layers, the functionary cell selecting its necessary food from this continual stream of life, giving off the effete matter, which is produced by the function, to these same connective layers, which collect all this matter and lead it to our sewers, the lymph canals.

It is easy to understand that these effete morbid matters have to accumulate around our functionary cells if that permanently continuing current of life's essence is slacking up or entirely stopped.

The functionary cell is not able to unload its effete matter on one hand, and on the other hand, the cell is not able to renew its exhausted material, it falls into a

condition of complete exhaustion or fatigue; fatigue in our muscles; fatigue in our peripheral nerves, and accordingly increased irritability; fatigue of our brain; no desire to work; general blue feeling, in one word, the general hysteric-neurasthenic misery.

The reflexes in these affections are a true and unmistakable image of our nerves and their conductibility.

At first they document a higher irritability; but in course of time, if the lymphostasis becomes chronic, the ability of the adducting nerve to telephone an irritation to the central cell, and to cause by its return through the abducting nerve a so-called reflex, gets lost.

The behaviour of the reflexes in chronic rheumatism, hysteria, neurosis, Peripheral and Central Neurasthenia are very characteristic, and very little studied, but it completely covers another illustrative fact of the truthfulness of my views.

My conception of these diseases about their mutual cause and character.

To produce a reflex we must have an adducting nerve, a central cell, and an abducting nerve.

We know that the fatigue, exhaustion or diseased condition of this central cell produces, at first an augmentation of the reflex irritability; if this diseased condition continue, and especially if the central cell be destroyed, the ability to cause a reflex action ceases, like in tabes, etc.

I insist upon it, that the reflexes can get lost when the central cell is entirely healthy, if the terminations of the adducting or abducting nerves in the parenchymatous tissue of the body are in a condition of fatigue from lymphostasis; they show increased irritability, if, the lymphostasis is relatively acute; they do not answer to any irritation, if the lymphostasis is chronic.

Can the initial stages of this lymphostasis be proven?

Certainly, it can, and it shows all the characteristic changes from the increase of small cells, in the lymph-spaces to the organized Froriep's swelling.

How is the effect of lymphostasis upon the cell, is it being destroyed?

Seldom can ,badly degenerated muscles be revived again, and we know how often we find intact fibrillae in the paralyzed muscles of persons who suffered for a life-time from essential infantile paralysis.

Brain and spinal marrow behave differently.

The meningeal and arachnoidal fluid, evidently acts as a kind of puffer between vertebral wall and cord or cranium and brain; swelling of the cord and brain, which as a rule is caused by lymphostasis, is given more space by the giving way of the fluids, and so the symptoms of lymphostasis are developing only gradually.

But if we have a very acute case of lymphostasis and extensive swelling of cord or brain, in fact that, the further swelling of the parenchyma is limited by the rigid walls of the osseous enclosure, then we have a condition similar to the one caused by a too close plaster of paris bandage; the circulation ceases, and the nervous parenchyma degenerates, and the whole shows the characteristics of any interstitial inflammation, increase of small cells in the connective tissue, and

destruction of the parenchyma, as we see it in Locomotor Ataxia, etc.

The rapidity with which any interruption of nutrition or lymphostasis, especially of the brain or cord, must influence the function of these organs, can be best demonstrated by the behaviour of the cells of many plants, which, if cut off, within a very few minutes droop their leaves, and, even if supplied again with water, pick up very slowly, or not at all.

Fortunately this complete interruption of nutrition of our central nervous organs very seldom takes place; the course of lymphostasis of the brain is very slow.

After the neurasthenia of the brain has developed to melancholia or other mental derangements, it takes many, many years to produce permanent changes in the nervous parenchyma, and the very fact that these mental disorders often show a total temporary improvement, ought to be a sign to us of the possibility of making those improvements permanent.

I referred, in my cited paper on lymphostasis, to the effect of a diluted alkaline water upon the precipitated accumulations of fibrin, which arise in the course of lymphostasis, and can easily be demonstrated in the peripheral lymphostatic conditions of chronic rheumatism, hysteria or neurasthenia.

This same wonderful effect takes place in incipient neurasthenia of brain and cord. I came to Hot Springs, an outspoken victim of brain neurasthenia, with intercostal neuralgia and sciatica.

Positive proof is the testimony of the members of my household; intense irritability overmastered my common sense, my educated feeling for just judgment, and got hold of my reason.

My memory commenced to fail for years, my functional activity, which used to know no bounds, gave place to a general sinking of my mental ability. It was brought on by over-work and mental taxation.

When I came here I had the distinct feeling as if I could master my brains up to the temples, but the entire space between them was, to my personal feeling, made up by a large mass which lay like a large fist behind my forehead, and which seemed not to take any part in my mental work.

I first took a vapour bath for 15 minutes, and the effect was wonderful.

With the increase of the perspiration, I felt that I was getting relieved more and more of that mass behind my forehead.

This intensely delightful feeling crept forward perceptibly and seemed to meet right in the center of my forehead, and my joy was boundless when I found that I was again master of my brain. I added to this vapour bath a hot foot-bath of 39 to 42 C. degrees, and finished with a cold douche upon head and spine (35 C. degrees). The neurasthenic feeling came back in the afternoon, but staid away longer and longer; made its appearance only in the morning, but disappeared after each bath; and now I am the old fellow again, stripped down to the waist and able to take up any fight in the arena of mental work. My heart, which beat 130 times during and after the hot bath (my normal pulse is 60) made short work of the small cellular accumulation and washed it away.

The Baths have 2 indications:

1. A bath taken lower than our body temperature cools off the body and makes it a receptacle for colds;
2. A bath above 36 C. degrees imbibes the body with the water, washes out the lymph sewers, adds warmth to it and hardens it against cold."

- Dr Hans Froelich, MD, in "Hot Springs Medical Journal", Vol. III, No.2, 15 February 1894.

Chronic Rheumatic Diseases and Gout and Their Relational to Functional Nervous and Mental Disorders

"We have had an opportunity to read the manuscript of Dr. Hans Froelich, MD, forthcoming book on "The Chronic Rheumatic Diseases and Gout, and their Relations to Functional Nervous and Mental Disorders", and are fully convinced that the revolutionary ideas, which form the basis of this work, will attract not only general attention, but will even create a sensation in the scientific world.

Dr. Froelich has been representing the idea for years, that the chronic rheumatic diseases and gout and the functional nerve diseases are based upon the same physiological, anatomical and clinical facts.

Leucocytosis causes leucolysis; the destruction of the leucocytes and their nuclei gives the impulse to interstitial precipitation of fibrine in the lymph, and establishes the rheumatic swelling and "painful point", which are common to all these diseases.

The nuclein acid, which is produced by the destruction of nuclei, causes local necrosis of the living tissue if it be present in tissues; where the lymph current is naturally slower, as in ligaments, capsules of joints, tendons, etc., and the deposit of urates is only incidental, as the incident ally present uric acid precipitates upon the rough necrotic parts, in the same way as we observe calcification of atheromatous arteries.

The precipitation of fibrine is caused or accompanied by or produces lymphostasis; and lymphostasis again produces those nervous and neuralgic symptoms which can be observed in chronic rheumatism, hysteria, traumatic neurosis, and peripheric neurasthenia, which are due to auto-intoxication of the parenchymatous cell with carbonic acid, the cells being surrounded through lymphostasis by their excrementitious matter, of which carbonic acid is the most dangerous part, as it destroys the ameboid motion of the cell.

Even the rare cases of purely central neurasthenia, Froelich says, are due to this auto-intoxication, only with the difference that we have no deposit of fibrine, as the lymph of the central nervous organs, the cerebro-spinal fluid, contains no fibrine.

It is interesting for us to learn, that the experiment which Dr. Bremer recently made for investigation of the influence of fright upon the blood of animals, were first made by Dr. M. Loewitt (Studien zur Pathologie u. Physiologie des Bluteu u. der Lymphe, G. Fischer, June 1892), with the only difference that Bremer calls blood platchets what Loewitt describes as destroyed nuclei, and that Bremer extended his experiments upon turkeys and other animals, while Loewitt only had rabbits at his disposal. "Leucocytosis and Leucolysis". - Dr. Froelich's.

"The treatment which Froelich uses and advises in these diseases is as original as his pathological views, and is based upon physiological facts.
He calls it a true physiological treatment. He advises for cutting off an attack the use of the lymphagogas and venesection. The former render the serum uncoagulable and prevent the precipitation of fibrine; venesection assists this action by the removal en masse of the polynucleated leucocytes, which are chiefly liable to destruction and formation of fibrine. Already established swellings of fibrine he dissolves with alkaline solutions internally administered, and locally by the use of the hypodermic syringe. Dr. Froelich finds his views corroborated by his results in such manner, that he cuts off an attack of gout almost instantly (within 24 hours) by the local injection of a solution of bicarb, of lithium or of sodium. A real dithyrambic in Dr. Froelich's recommendation of Hot Springs is given. The internal use of these waters increases the alkalinity of the blood, assists the liquefying of the fibrine masses; and even when used externally in the form of baths, which he advises to be taken as hot as possible, as they increase the circulation to such an intense degree that the obstructed lymph spaces are opened and the stagnant waste matter of the lymph is moved forwards. He recommends in the strongest terms these baths for neurasthenia and gives positive facts for their effectiveness in these cases." - in "Saint Louis Medical and Surgical Journal", Vol. 69, 1895.

Chapter 63

Lymph Stasis

Note Before Reading this Chapter: *Please read first, the articles in reference to the effects & consequences of Lymph Stasis, in the Book "The Unknown Causes of Disease, or the Idiopathic Nature of Medicine", 2021.*

"The basic condition for development of lymphedema is lymph stasis.

Lymph flow is slowed down or stopped at different levels of the lymph vessel system.

The primary cause for lymph stasis is interruption of lymph outflow pathways.

Some authors call it "low output failure".

Insufficiency of lymph vessels as fluid conduits in cases of lymph overproduction should not carry the name "lymphedema", because the primary etiologic factor remains outside of the lymphatic system.

The pathological process occurring in the swollen tissues in lymph overflow is different and thus is the therapy.

Lymphedema is a progressive disorder characterized by impairment of lymph flow from tissues to the blood circulation due to damage of lymphatics (occasionally malformation), with subsequent tissue accumulation of physiologically extravasated blood humoral and cellular factors, tissue cell products and wastes, and foreign antigens.

It is followed by formation of edema, chronic inflammation, and fibrosis of tissue." - Dr Waldemar L. Olszewski, MD in "Lymph Stasis: Pathophysiology, Diagnosis, and Treatment", 1991.

Elephantiasis

"Lymph stasis causes inflammation and hypertrophy of the connective tissue with excess of lymph and hence the limb enlarges (Manson).

A chronic inflammatory hypertrophy induced by lymph stasis in fibrous connective tissue, occurring usually in the skin and subcutaneous tissues of the leg, scrotum, vulva, arm and breast.

Lymph stasis, reduced resistance of tissue, repeated mild sepsis and imperfect absorption of inflammatory products, the natural result being the hypertrophy of the limb." - Dr Walter Edgar Masters, MD in "Essentials of Tropical Medicine", 1920.

Effects of the Improper or Impaired Functioning of the Lymph Flow

When the Lymph, the Emunctory circulation is impaired in its functioning, it arises those tendencies in a body that show signs of irritation to any part of the body, roughness to the skin, receding effect in the gums, the drying in the nasal passages; through anxiety the throat becomes dry, and the activities through the alimentary canal tend to become slowed; the peristaltic movement of the activity of the alimentary canal becomes clogged.

For it is the lymph flow that makes for activity through the alimentary canal, and when there is the tendency for the inflammation, it produces, the drying of the lymph flow.

The Inflammatory Nutritive Disturbance of the Skin in its Relation to Venous-Lymphatic Stasis Chronic Inflammation of the Skin, Terminations of Inflammation of the Skin

"We must now point to the fact that during the further course of superficial as well as of deep-seated inflammations of the skin, certain changes may develop in the tissues themselves, which change essentially the conditions of the return flow of blood, of lymphatic absorption, and of **the lymph current in the diseased skin.**

These changes may arise from general conditions inherent in nutrition or may be produced solely by the inflammatory process in the skin. The latter condition may be brought about by a functional or anatomical disturbance of circulation which may occur in cardiac disease, as well as when nutrition is enfeebled from any other cause, in cachexiae from dyscrasia, in short in all those processes which depend upon diminished energy of the blood-pumping machine itself or upon a functional disturbance in the conducting pipes. Under certain circumstances, however, the same causes may exercise the same effects merely upon certain systems of the body or upon certain regions which are predisposed thereto on account of their greater distance from the heart or of an unfavourable construction of their local venous and lymphatic plexuses, perhaps also of the local innervation.

Examples of the latter are the well-known stases in the lower limbs of females who have borne several children, or that condition which is termed acne rosacea of the face, etc. We must also regard, as a further example, the local circulatory disturbance left over after superficial and also after deeply spreading inflammations of the skin, and which constitutes a transition to so-called chronic inflammations of the skin.

Venous Stasis and its Relations to Inflammation

Venous stasis in a circumscribed territory, whether produced purposely or arising spontaneously, causes cyanosis, oedema, exudation of haematin and red globules, but not of white globules; it has nothing in common, therefore, with the inflammatory change in the walls of the vessels. As in animals, however, it is capable of producing inflammation when it has persisted for a longer period, and is then relieved.

When inflammation is already present, the symptoms peculiar to stasis (cyanosis, oedema, exudation of haematin and ecchymoses) appear so much more distinctly after subsequent venous stasis, the more marked the inflammatory change has been.

There is no doubt, that the stasis may act like another irritant, that phenomena of inflammation may be developed by stasis after some time.

These facts enable us to understand that inflammatory processes under disordered circulatory conditions.

The cellular infiltration and inflammatory oedema of erysipelas disappear as completely in those portions of skin which return to the normal, as they do in superficial inflammatory processes. It is evident from the anatomical appearances and clinical signs that in true erysipelas we always have to deal with an affection of the lymphatic vessels (and blood vessels) deep down and extending into the subcutaneous tissue. While a rosy redness is present in superficial erythema, erysipelatous redness shows a peculiar bluish-red glistening with a yellowish border, corresponding to a congestion deep down in the skin covered by a thicker layer of tissue, and the oedematous swelling corresponding to the serous infiltration of the connective tissue in the depth of the skin.

Erysipelas must be regarded probably as a capillary lymphangioitis and capillary phlebitis, which can only be distinguished by its superficial expansion from the bandshaped redness of phlebitis and lymphangioitis of larger vessels.

As a matter of course, the process results secondarily in an affection of the upper layers of the skin, the papillary layers of the cutis, and the epidermis.

In the human skin the following changes occur as evidences of this improperly termed chronic inflammation, which should be really called “chronic stasis in consequence of previous inflammation”.

1. The phenomena of inflammatory oedema give place to the oedema of stasis, i.e., the escape of blood-serum from the veins. At the same time, the connective-tissue cells present in the connective tissue of the skin begin to grow and proliferate, and in their further course present the various stages of development into fibrous and elastic networks and bands, new formed blood-vessels, etc.

The clinical signs of this condition are: infiltration and thickening of the skin, at first with purely serous contents which may be forced away partially upon pressure; a dark-red, gradually passing more and more into a bluish tint, of the

surface upon which a disturbance develops secondarily in the formation of new horny layers, inasmuch as a slow, branny desquamation occurs. This is the typical highest stage of chronic superficial inflammation of the skin, the so-called chronic eczema.

2. Under specially unfavourable circumstances, such cases also may result in further degeneration, in those necrobiotic processes which occur ordinarily only as terminations of phlegmonous inflammations. Thus, chronic eczema terminates occasionally in sclerosis of the connective tissue of the skin, together with stasis processes in the sanguineous and lymphatic capillaries, i.e., in pachydermie.

The pustules of acne and variola end occasionally in the formation of ulcers and cicatrices, while these terminations constitute the rule in deeply spreading phlegmons. Here they appear either as necrobiosis with softening and necrosis of the tissues in layers (in phlegmons affecting the layers of the skin, such as burns and congelation), or in the form of circumscribed degenerative processes with ulceration and gangrenous degeneration (in localized phlegmons: furuncles, anthrax, and the like). Under the same conditions, as in other regions, fatty and amyloid degeneration, mucoid metamorphosis, cheesy degeneration, and calcification play their part in the integument.

The Non-Inflammatory Nutritive Disturbances of the Skin Due to Independent Stasis-Processes

There is a series of morbid processes in the skin, in which venoso-lymphatic stasis and the consequent tissue changes appear from the start in a characteristic manner. Direct mechanical obstructions to the circulation are the most frequent causes of such circulatory disturbances, and occasionally inflammatory processes in the walls of the veins and lymphatics (phlebitis, lymphangioitis).

It cannot be denied that these diseases of the vessels are followed occasionally by a form of passive inflammatory congestion (erysipelas) and that, on this account, these acute hyperamic processes are connected directly with the chronic forms of stasis and anomalies of absorption; for example, elephantiasis arabum is thus connected with erysipelas and acute lymphangioitis.

We know from experiment and experience that, under favourable circumstances, the venoso-lymphatic stasis may act upon the skin as an inflammatory irritant.

If this occurs, it results in the development of true congestive processes, even of an arterial character, of which erysipelas is an illustration.

The passive stases of circulation and absorption which characterize diseases of this kind produce, according to their form, partly incomplete, partly complete obstruction of the circulation. As has been shown above, the effects of the former vary according to the degree of stasis and the greater or less implication of the lymphatic apparatus.

They are either:

1. Mere passive (stasis) hyperaemise, they lead to transudation of blood-serum though the walls of the vessels into the surrounding tissues. Pathology applies to these serous effusions the name oedema and recognizes various modifications of it.

2. To the class of stasis, dermatoses, apart from mere passive (venous) hypertemias and local ischaemias and also complete stasis-processes with necrosis of the skin, as, for example, local asphyxia, traumatic decubitus, etc. - belong in the main 2 forms of disease, both of which begin with venoso-lymphatic stasis, and terminate in part in hypertrophy, in part in atrophy.

The first form is represented by elephantiasis arabum, or pachydermia, the second by sclerema (scleroderma, scleroma of the skin).

It appears to me proper that in this class should be included "myxcedema", first described by Gull as a chronic general oedema with pallor, dryness, atrophy of the skin and mucous membranes, diminution of temperature, and psychical disturbance.

According to Ord and others, the oedematous in filtration presents a marked mucoid structure.

It must be reserved for the special nosology to give the clinical symptoms of the other diseases mentioned above.

At this place the reasons for giving the above definitions will be briefly stated:

Elephantiasis arabum is not an inflammation of the skin, and does not begin as such, but, in the endemic forms which constitute the most typical varieties, with a symptom of stasis, viz., with acute or chronic oedema of the subcutaneous connective tissue, followed by enlargement of the lymphatic glands, occasionally by inflammation of the larger deep veins and lymphatics, then by erysipelas, and finally thickening of the connective-tissue layer underneath and in the skin.

The deep inflammatory symptoms which occur (erysipelas) are not a primary part of the process, but the result of a nutritive disturbance.

The hypertrophy of the connective-tissue layer is evidently the result of a disturbance of absorption in the tissues of the integument, as is distinctly demonstrable by the typical occurrence of oedema and the increase in thickness of the connective tissue after every relapse of acute phlebitis, lymphangioitis, and erysipelas. These remarks hold good also with regard to scleremata of the skin.

The first symptom of every scleroderma is lymphatic oedema, circumscribed or diffuse swelling of the tegumentary tissues.

This condition corresponds clinically to increased tension of the skin, diminished temperature, loss of sensibility. The immediate cause of this change the oedema, which is always present at the onset, places it beyond a doubt that we have to deal with stasis and an anomaly of absorption.

Sclerema
Inflammatory State of the Subcutaneous Cellular Tissue

The hard, tense, firm skin becomes continually thinner with an increase in the symptoms of tension, it feels like parchment, and, on account of the disappearance of the underlying adipose and muscular tissues, seems to be adherent to the bones; the circulation suffers considerable disturbance, and local conditions of stasis (asphyxia) occur which lead to mortification of the tissues with subsequent ulceration.

The joints are fixed by the immovable skin, the patients are impeded in their manipulations, and as the vegetative functions also suffer severe disturbance, a fatal termination, which only occurs, however, after a number of years, is unavoidable.

The amyloid degeneration of the parenchymatous organs is attributable to the numerous disturbances of nutrition by the impeded circulation, but the influence of the morbid innervation, which is the probable starting-point of the disease, must not be left out of consideration.

The form of this disease, described by Wernicke as atrophic or cicatrizing sclerema, should, therefore, be regarded as the final stage of the scleremato us process rather than a variety.

Heller (Deutsches Archiv f. klin. Medic., 1872, S. 155) has carefully studied, not only the skin, but also the other organs and found that the lymphatic vessels were enlarged and dilated in various organs (small intestines, heart, omentum), that all lymphatic glands and the spleen were considerably harder and swollen by lymphoid cells, and that the new-formed connective-tissue-like cells which were present in all the organs, even in the muscles, showed a direct connection with the lymphatic vessels.

The statement that the thoracic duct and its roots were obliterated appeared to be decisive in its significance. On account of this pathological change, a stasis of lymph was said to be produced in the connective-tissue layers of the general integument, with the sequelae mentioned above.

Elephantiasis Arabum S. Pachydermia

Symptomatology

Under the term elephantiasis arabum is meant a disease of the layers of the skin and the subcutaneous connective tissue in individual parts of the body, running a chronic course, beginning with inflammation of the blood-vessels and lymphatics, and often leading to oedema and erysipelas; it is followed by an enormous, deforming increase of tissue.

The disease affects mainly the lower limbs and the integument of the genital apparatus, and two forms of elephantiasis, characterized by their localization, have been recognized accordingly, viz., Elephantiasis cruris, and E. genitalium.

In elephantiasis cruris, the origin and development of the affection are preceded by a morbid change characterized by the ordinary signs of erysipelas, and which is often combined with inflammation of the veins.

The skin becomes inflamed, painful, shows the streaked redness of the affected lymphatic vessels or venous apparatus, and the neighbouring lymphatic glands become thickened, swollen, and extremely painful.

After the termination of the erysipelas, which is accompanied usually by violent fever, a slight oedematous swelling occasionally remains behind.

The skin is slightly tense, shining, and the underlying connective tissue appears somewhat more consistent. In some cases the erysipelas runs its course without any sequelae, and the diseased parts present merely a slight desquamation or change in the tissues.

In the majority of cases, however, the oedema mentioned continues for some time, and if the skin is affected by erysipelas again or several times in succession, a tendency to persistent swelling of the lymphatic apparatus with increase of the oedema is thus produced.

With the frequent recurrence of the erysipelas, either spontaneously, or after external provocation the oedema becomes permanent, the skin presents a slight depression on pressure, but as the subcutaneous tissue is more resistant than in oedema which has developed without severe and frequent erysipelas, in places the yielding character of the integument is entirely absent, and it is hard and stiff.

These conditions are also favoured by the stasis of lymph in the vessels from the occlusion of the glands, on account of which the dilated lumina of the vessels become stringy and hard, and form a uniform mass with the infiltrated connective tissue.

The increase in volume of the diseased parts constantly becomes more striking, and thus develops gradually that enlargement which causes the monstrous appearance of elephantiasis.

The symptoms of elephantiasis have been found to develop within one or more years. The external form of the new-formed masses of tissue varies according to the parts affected. Elephantiasis of the lower limbs thus appears entirely different from that of the genital apparatus.

The swelling and thickening of the affected limbs become shapeless, the contours of the muscles disappear, and the heavy shapeless extremity reminds one of the enormous dimensions of the leg of a rhinocerus or elephant, whence also the name elephantopus.

The changes in the surface of the integument are manifold; it is either smooth, tense, and shining, or studded with numerous nodules, prominences, or circumscribed tumours which must be regarded as papillary proliferations and secondary formations, since all layers of the tegumentary tissue take part in the morbid process.

But apart from the more marked changes of tissue and the new-formations on the surface of the skin, various morbid processes, such as eczema, papular efflorescences or ulcerations, are found upon it.

The latter assume commonly an unfavourable appearance, develop slowly from the surface, but soon extend more deeply, destroy the fasciae and muscles, and erode the osseous tissues.

The edges of the ulcers are elevated, swollen, and form a crater-like wall around the deeply-spreading loss of substance.

In places where the epidermis is unchanged, it is dry, rough, covered with thick lamellae which are arranged in layers, next to and above one another, in a grayish-brown or dirty-gray mass, as in ichthyosis.

In some places, however, the skin usually bursts, or even the lymphatic vessels are opened, on account of the severe stasis, and an escape of a clear, milky fluid thus occurs (lymphorrhcea or lymphorrhagia).

The changes occurring in the deeper layers are still more worthy of note.

The thickening and extraordinary enlargement of the affected parts depends on the increase of the connective-tissue elements in the subcutaneous stratum, as well as in the cutis itself.

According to Virchow, accordingly, elephantiasis constitutes a diffuse connective- tissue tumour and belongs to the class of fibromata.

The new-formed connective-tissue elements are present in such masses that they form a dense, firm callosity which increases still more in consistence and size, on account of a partial transformation of the other tissues, such as muscles, vessels, and nerves, into connective-tissue masses.

Elephantiasis of the genitals in men almost always starts from the scrotal integument; in women, from the labia and clitoris.

In some cases, the disease appears first upon the penis; in others, upon the scrotum.

Elephantiasis of these parts often attains a very considerable size, but the larger tumours occur on the female genitalia (labia majora) and, being circumscribed tumours, often form the subject of operative treatment.

Reyer has published a large number of observations, collected in Egypt, of individuals suffering from E. genitalium, in which the tumours weighed 18 to 23 kilos, and the patients had been affected with this disease for 20 years and up wards.

In these tumours, which extend almost to the knees and ankles, a small, navel-like depression is usually visible in the upper third of the tumour; this presents itself to the examining finger as a narrow furrow, and leads either to the glans penis or the entrance to the vagina.

In other respects, however, elephantiasis of the genitals does not affect the general health of the patient to any extent, and Alibert reports as a curiosity that the above-mentioned patient, who was operated upon by Clot-Bey, and whose elephantiatic scrotum, when removed, weighed 50 kilos, produced 2 children after the disease had lasted 13 years, but before it had attained its monstrous development; a proof that the functions of the testicles had not been destroyed by the morbid process.

The other subjective symptoms are the same, at the onset of the disease, as in erysipelatoid and lymphatic inflammations of the skin.

In addition to general febrile disturbance, the patients suffer from tension, drawing, and pains in the affected parts of the skin, symptoms which disappear gradually after the formation of the tumour has assumed the upper hand, and are then followed by the above-mentioned annoying conditions of increase of weight and formation of the tumour.

The inguinal glands are always swollen and enlarged, and occasionally form small tumours in the groins, which sometimes permit the escape of lymph.

In addition to the localities mentioned, elephantiatic formations also occur in other parts of the body, such as the upper limbs and the integument of the face.

Anatomy

After prolonged duration of the disease, the nervous substance is also destroyed, and where it can no longer be found distinctly in the dead body, anaesthetic and paralytic conditions were present during life.

The clear yellowish fluid which appears in abundance on the cut surface of the skin is nothing more than lymph which coagulates in the external air.

Virchow explains this accumulation of lymph by the fact that in elephantiasis the glands swell at an early period, and thus impair the functional activity of the lymphatic vessels.

On account of the stasis of lymph within the vessels, these become dilated and thus give rise to the abundant presence of this whitish-yellow fluid which had already seemed characteristic to Rayer.

This primary affection of the lymphatic glands thus constitutes an important differential characteristic from other oedematous and erysipelatoid inflammatory conditions. The epidermis presents a variable condition, occasionally is very thin, in other cases considerably thickened.

When the papilla is not distinct, the epidermis thin and smooth, when it is strongly developed and branched, it will be covered by the epidermis in thicker layers, and following the elevations, produce the previously mentioned ichthyotic appearance.

The Malpighian layer often shows considerable increase of pigment, and the capillaries are dilated in places.

In some cases the lymphatics are entirely intact, but then the veins are markedly dilated, with distinct hyperplasia of the tunica adventitia.

Aetiology

The ingestion of certain articles of food, regarded as factors giving rise to elephantiasis." - Dr Hugo Ziemssen, MD, Professor of Clinical Medicine, Munich, Editor of Ziemssen's Cyclopaedia of the Practice of Medicine, in "Handbook of Diseases of the Skin", 1885.

Some Points in the Etiology of Pulmonary Tuberculosis

"In considering the subject of pulmonary tuberculosis, and in endeavouring to support a theory deduced from etiologic facts, which tends to show that the almost universally accepted germ cause of this disease is quite secondary in its influence, it must be admitted that, while it is evident to my mind the ground taken is not irrelevant, much opposition is to be expected.

Most physicians recognize, in certain individuals, a pre-tubercular condition; meaning by this term that in such persons who subsequently develop tuberculosis an abnormal condition exists, which, while symptomatic or suggestive of consumption, does not give that evidence of the disease which renders the diagnosis absolute; i. e., the demonstration of tubercle bacilli.

It can not be denied that the tubercle bacillus plays an important part in the phenomenal expression, if not in the etiology of tuberculosis, but facts are daily being brought to light which tend to prove that the bacillus alone is as inefficient as a grain of wheat is ungerminative without sunlight, air and moisture.

When one considers the impunity with which colonies of tubercle bacilli are probably taken into the system of the majority of persons, we must fall back on the certainty of a pre-existing condition, which, when present, offers favourable influence for the development of the bacilli, on which the latter depend for support, and without which the germ is rendered inert, even though it may exist in the blood.

Hardly an autopsy is made wherein it is not seen that some time during the life of the subject, tubercles had been present in the lung, or in other tissues of the body, which tubercles had resolved or had been discharged as evidenced by cicatricial repair.

We know to obtain cicatricial repair of lung tissue a suppurative process must have coexisted, and that suppuration never takes place where there is not interference with, or stasis of the circulation of a part involved. In other words, there is a loss of normal correlation between the supply of arterial blood, carrying oxygen and nutrition to the part, and the venous blood, bearing away the carbonic acid gas and waste tissue elements.

Essentially, then, perfect tissue repair is one with perfect circulation, and conversely, any stasis to the circulation prevents perfect repair.

Any suppurative action must have origin in an obstruction to circulation in the part affected, and resolution, occurring during any stage, depends on the re-establishing of normal correlation in the entire circulation of such diseased tissue. Abscess formation is nature's way of ridding tissues of abnormal waste when the circulation is impeded.

The Anatomy and Physiology of the Circulation System

Circulation in the animal system is a complex phenomenon.

Physiologically of 2 kinds:

1. Afferent.
2. Efferent.

Anatomically of 3 kinds:

1. Arterial, which is superabundantly generous for nutrition.
2. Venous, which is inadequate for the removal of all the excess.
3. Lymphatic, which supplements the office of the veins in removing waste.

A vigorously active lymphatic system precludes danger from tissue stasis in rapidly wasting parts, while inactivity of the system implies obstruction.

We may logically distinguish the lacteals and lymphatics as belonging to different systems.

It is true that both character of vessels hold pabulum, a fact which does not argue against the lymphatic as being a system, the office of which is purely Emunctory; for the pabulum found in these vessels, that is not excreta in the strict sense, is so in significance being an excess of nutritional material which would speedily assume the form of an irritant were it not removed to a new situation as implied in its restoration to the general circulation.

The lymphatic system, excluded from the lacteals being accepted as primal Emunctory organs, it must follow that glands like the pancreas, liver, kidneys, etc., must be considered as secondary or excremental Emunctories.

Tubercle is first met with where lymphoma or lymphangitis has altered the correlative relations of the lymphatic system, and its meaning is that obstruction exists.

It is to be argued that, primarily, tubercle is a thing having no objective nature and it can be similarly said of the tubercle bacillus.

Tubercle not being an objective must be a subjective condition, the subjective lying primarily with a perversion of the lymphatic system.

We may now also see how default in lymphatic action is the starting point out of which may arise many phenomena of disease, and that tuberculosis is in reality not a disease but a symptom, a symptom of lymphatic disturbance or stasis.

This fact is proved by the analogy between lymphoma or surgical tuberculosis and phthisis or tuberculosis of the lungs.

What, then, is the cause of lymphatic stasis leading to a condition which may result in tuberculosis?

We know that an irritation acutely expressed, as in the case of burns, induces active inflammation.

We also know that irritation of a mild degree, applied continuously, induces chronic inflammation, as in the case of gastric catarrh from the alcoholic habit.

We have seen how irritation, increasing the flow of blood to a part, tends to

cause hypertrophy of that part; yet, that so long as the efferent vessels carry off the additional waste there is no tendency to ulceration, or retrograde tissue metamorphoses, other than that induced by the contraction of new tissue formation, and the secondary cutting off of the blood supply.

But as soon as the correlation between the efferent and afferent vessels becomes interfered with, and the waste products are left in the part, ulcerative and suppurative changes take place.

The direct cause of lymphatic stasis may lie in an excessive amount of waste material in the blood, choking up lymphatic circulation. These waste elements may differ in character and only act as local irritants from the fact that they are in an incompetent position in the circulation for nutrition, as evidenced by the attempt nature makes to excrete them.

It is a fact that in phthisis (progressively wasting or consumptive condition especially pulmonary tuberculosis) the venous blood is brighter than normal.

This gives evidence that oxygen imbibed by the red blood corpuscles in the lungs is not properly oxidized in the tissues, and passes over through the capillaries in a free state.

We know that the blood contains phosphorus in an oxidizable form, and that oxygen has a great chemic affinity for phosphorus; hence it is not out of reason to infer that, in this disease there is a deficiency in oxidizable phosphorus.

This statement is borne out by the results of phosphorus feeding to phthisical persons, when the venous blood soon assumes its naturally darkened hue.

It is on complete oxidation in the blood that the healthy cellular life of the animal depends. Deoxidation means death.

Life is opposed to death, and nature is continually striving to preserve the former by preventing deoxidation and ridding herself of such animal cells as have become deoxidized. As soon as deoxidation in a cell takes place, that cell becomes devitalized, and is crowded out of its relation with living cells.

If it can pass out through the excrementory channels, as nature intended it should, no harm will result, even if many bacteria are feasting on the defunct cell.

If it can not pass out, but is held by stasis, or obstruction, or over crowding, in its relation with other cells which have become devitalized we soon have a collection of dead material causing irritation to the nerve elements of surrounding tissue, and inflammation results.

I incline to the opinion that we have:

1. A Stasis of Waste elements in the Lymphatics.
2. A Nerve Cell Paralysis due to the Stasis.
3. Increased Blood Supply to the part as a Result of the Paralysis, and which, owing to the existing obstruction, brings about the phenomenon inflammation.

(All this is prior to the introduction of a tubercle bacillus)

When the tubercle bacillus enters the system of a person presenting a favourable cultivation ground for its development (which cultivation ground may be recognized in a lymphatic stasis) the attack is directed only to devitalized cells.

Of this point we may feel quite certain, inasmuch as oxygen destroys the bacillus, and a thoroughly oxygenized blood cell will resist the attacks of bacilli.

Bacteria, when no obstruction to waste elements exists, pass out of the body through the various Emunctory organs.

Their products of toxins and toxalbumins are likewise eliminated without harm to the individual.

Animal experimentation, for the production of tuberculosis by injections, I feel, is of little value, inasmuch as only such animals are affected by injections as would develop lymphatic stasis from any sort of irritation mechanically applied, and the cultivation ground is at once presented.

It must be rationally argued that the favourable medium for one kind of bacillus may not be identical with that of another and, hence, various forms of germs may appear in different diseases, not because the germs are specific, except as diagnostic phenomena, but because they develop and multiply in different media.

It is to be assumed that a cause for lymphatic obstruction may be found in an incompetent excrementory organ, which theory is perfectly in accord with the acknowledgement of the lymphatic origin of tuberculosis.

Such organ may be the seat of congenital or acquired incompetency; hence our cases giving family histories of phthisis.

Acquired consumption may arise from a pneumonia, the frequent "taking of colds", a bronchial catarrh and other respiratory disorders in which the lymphatic circulation of lung tissue is obstructed to a greater or less extent, and the blood cells devitalized.

Cure depends on the restoration of eliminative function in these lymphatics and in building up the general system by restoration of impaired oxidation.

The question whether pulmonary tuberculosis may be communicated by contagion, or infection, does not rest with the proving that a specific germ is found in this disease, **for we must know that unless a favourable medium is presented such germ will not develop, and that to obtain this medium there must be a previous condition to be recognized as pathological.**

Conclusions

The conclusions regarding the etiology of pulmonary tuberculosis may be summed up as follows:

1. Pulmonary Tuberculosis should be considered as primarily due to a Lymphatic Stasis, of congenital or acquired variety, depending on incompetency of excrementory function, and deoxidation of blood cells.

2. That the tubercle bacillus should be regarded as a phenomenal expression of the disease, only because a favourable medium exists in the lymphatic stasis for its cultivation, and, hence, symptomatic rather than etiological.

Its development is often some length of time after the stasis is apparent, as evidenced by the so-called scrofulous (having a diseased run-down appearance) condition existing in most phthisical (with a progressively wasting or consumptive condition) persons.

The great danger in considering the etiology of pulmonary tuberculosis lies in the fact that we are too prone to lose sight of the chemic composition of man, and the fact that disease is but a chemic decomposition, in the universal furor after a specific germ, the phenomena of which may be observed in various media in and outside the body." - Dr Frank S. Parsons, MD, read at the 46th Annual Meeting of the American Medical Association, Baltimore, Md, in "JAMA", 1 June 1895.

"Much prominence has, of late years, been rightly given to what is known as the "germ-theory" of disease. Anyone who has bad much practical experience in morbid anatomy must have been struck with the almost constant presence of caseous material in some part of the body in cases of tuberculosis.
Many authors have called attention to this fact, but the exact relationship between the two sets of phenomena does not appear to have been definitely settled.
Are they related to each other as cause and effect, or are they merely conjoint effects of some ulterior cause or causes, and so independent of any
true causal relationship?
Again, are the caseous glands originally dependent on the same specific germ that subsequently attacked other parts of the organism?
If so, is it a case of auto-infection due to subsequent dissemination of the germ, which may have been dormant in the gland until some accidental circumstance set it free to circulate in the organism and infect distant parts?" - Dr Wayland C. Chaffey, MD, in "Lymph-Stasis, or, Retardation of Lymph as an Element in the Causation of Disease", 1889.

Natural Washing Out

"**How nature has provided to ward off diseases, by washing out before fermentation should set up in the lymphatics, from being received and retained the length of time, that destructive chemical changes would begin its work of converting elements and discharging them from the system as unsuitable for nutriment.**

In order to avoid this calamity we are met with two important thoughts, one of the power of the nerves of the lymphatics to dilate and contract, also that of fascia and muscle, to dilate or constrict with great force when necessary to eject substances from gland, cell, muscle and fascia.

Thus we see a cell loaded to fullness by secretion which it cannot do without; open-mouthed vessels through which it receives this fluid.

Then again the system of cellular sphincters must dilate and contract in order to retain the fluids in those cell-like parts of the body.

Now we are at the point when ready for use in other parts of the system, those sphincters must temporarily give away, that the gland may relax and dilate.

Then the universal principle of constriction throughout the whole body can discharge the contents of the lymphatics of all divisions of the body, which is surely the normal condition.

Let the lymphatics always receive and discharge naturally.

If so we have no substance detained long enough to produce fermentation, fever, sickness and death. I think this thought has been presented plainly enough to be fully understood." - Dr Andrew Taylor Still, MD, DO in "Philosophy of Osteopathy", 1899.

Relation of Obstructed Cardiac Circulation to Lymph Stasis

"The explanation of this relation of cause and effect between cardiac disturbances and lymph-stasis must, in a general way, be sought in the varying conditions of blood pressure.

A potential, if not the predominant, factor concerned in the flow of the lymph is the difference between the arterial and venous blood-pressure; the greater this difference, the more rapid the movement of the lymph.

In a normal condition of the heart, venous orifices, and great afferent and efferent vessels, the blood-pressure n the innominate veins and their affluent branches, during diastole, is at its minimum, represented in comparison with the pressure at the aortic summit as nil; so that, whatever may be the potentiality of the differenced between the arterial and the venous blood-pressure as a force in promoting the movement of the chyle (milky fluid containing fat droplets which drains from the lacteals of the small intestine into the lymphatic system during digestion) and lymph, it is at its maximum when the venous brood-current is

flowing most easily and rapidly into the right auricle.

Therefore, it must follow that any disease of the heart, or any condition of its affluent veins, which retards, impedes, or obstructs the free and rapid flow of the venous blood into the right auricle and through the tricuspid orifice, will slacken, interrupt, and obstruct the movement of the chyle and lymph in the thoracic duct and its tributary vessels.

This conclusion is not derived merely through inductive reasoning, but is illustrated and verified by clinical observation and post-mortem appearances." - in "A Reference Handbook of the Medical Sciences", Vol. 8, 1894.

Tuberculosis of the Kidney

The greater destructive force from tuberculosis is the kidneys, and the liver, for rarely (this would be well for all to remember), has there ever been a case of tuberculosis without first the kidneys going bad.

> *"A. Borrel (February 1894), has studied experimental* ***Tuberculosis of the Kidney. Invasion takes place through the lymphatics****. There is more precise localization, the tubercles occupying the medullary and cortical substance. Here also, however, the process remains interstitial, the epithelium not being at all involved. These results differ altogether from the opinion of Baumgarten upon the participation of the fixed cells and renal epithelium, and confirms the views of Virchow and Metschnikoff,* ***that tubercle is an accumulation of lymphatic cells, and that lymphatic granulation is identical in all organs.****" - in "Annual of the Universal Medical Sciences", 1895.*

Is Lymphatic Obstruction a Factor in Sprue?

"Recently 2 cases have come under my care which may possibly throw some light upon the pathology of sprue, a disease the pathology of which is still obscure.

In both these cases laparotomy was I performed for chronic appendicitis, and it was observed that there were certain changes in the small intestine and the lacteals.

Dr P. H. Manson-Bahr, MD in "The Lancet", 7 June 1924, calls attention to the importance of post-mortem examinations in the earlier stages of the disease.

And there is the possibility of observation during laparotomy performed for surgical complaints.

The following are instances:

Case 1: Mrs. H. was operated upon for chronic appendicitis on 30 April 1924.

She gave a history of sprue 2 years previously, and stated that though better she still had loose stools. At the operation, noticing that the ileum was thinned and of different colour from normal, I pulled down a piece of jejunum and found a very striking condition.

All the lacteal vessels stood out in a most remarkable manner, each group of blood-vessels being accompanied by a white knotted cord, which could be traced across the surface of the intestine back into the mesentery for some distance.

It gave the appearance of a piece of thick cotton having been inserted along the course of all the vessels with knots tied at regular intervals.

This condition was uniform throughout the few coils of intestine which I examined. The intestinal wall was of a dull brownish mottled appearance, darker brown areas merging into areas of a lighter shade.

During convalescence the stools were not typical of sprue but loose and pale.

Case 2: Mrs. S. On 28 May 1924, I had the opportunity of verifying the above observations in a case of definitely active sprue with characteristic stools, operation being performed for chronic appendicitis. I found a very similar condition of the intestine and lacteals. In addition, the mesenteric glands were seen to be swollen.

The lacteals on closer examination were found to collapse on pressure with the point of the needle and did not appear to be thickened as far as one could make out. In neither case did I find anything indicative of ulceration of the small intestine. However, with a small appendix incision one's opportunity for a thorough exploration was necessarily restricted.

Never having seen the above-noted appearances before during a considerable experience of abdominal surgery, I cannot think there is any doubt that these are manifestations of sprue.

Moreover, a distended condition of the lacteals, as a physiological state, is far from probable after a period of starvation preparatory to operation.

Two facts would appear to be possible to infer from a condition of distended lacteals:

1. That absorption is taking place from the mucous membrane of the small intestine.
2. That there is a delay in the passage of chyle to the general system.

The point arises as to where the delay occurs, and I would suggest the lymphatic glands of the mesentery as the most probable.

In the case of Mrs. S., these glands were certainly enlarged.

We know positively that the mucous membrane of the small intestine in the final stages of sprue becomes so profoundly changed that its power of absorbing is little or nil.

In the period of active disease is the deficiency in absorption accounted for by a defect in the small intestine mucous membrane, obstruction in the lymphatic system, or by both?

Lymphatic obstruction may possibly be the predominant factor.

As an hypothesis it is quite conceivable that the continued passage of toxin from the intestine may inflame and finally sclerose the lymph glands of the mesentery, hindering and finally blocking out the lymph passage way.

After all, what other chronic disease have we in the whole sphere of medicine in which large areas, if not the whole, of the small intestine mucous membrane is inflamed, evidenced by the destruction of the intestinal wall seen at autopsies as the most conspicuous lesion?

The conception of concurrent changes in the mesenteric glands caused by their efforts to deal with noxious substances derived from the small intestine is quite within the range of possibility, and it should be remembered this may be going on from end to end of the small intestine.

The putting out of action of small groups of mesenteric glands is well known in several diseases.

But what disease except sprue puts such a heavy strain on the mesenteric glands as a whole?

The peculiar appearances described, are of sufficient importance to record in the hope that surgeons and pathologists will pay particular attention to the lymphatic system." - Dr I. Davenport Jones, MD in "The Lancet", 6 September 1924.

Edema

"Edema of the extremities can be as incapacitating as arterial diseases.

The edema caused by venous stasis in varicose veins produces much suffering and limitation of activity.

Blood-vascular edema occurring in nephritis from capillary injury leads to swelling throughout all the tissues of the extremity, producing a pitting edema.

A lymph edema often accompanies impairment in the venous return of an extremity as is seen in varicose veins or thrombophlebitis.

This feature is rarely recognized and the swollen, indurated limb is usually attributed solely to obstruction of the venous outflow, whereas the true, primary cause is obliteration of lymphatic vessels by infection with resulting lymph stasis.

Lymphatics

I want to emphasize the presence and the importance of the lymphatics whenever body circulation is being considered.

Lymphatics are modified veins and the lymphatic system, with its definite vessels and its definite capillaries of endothelium, plays as definite a role in absorption as does the venous system. The venules or blood capillaries contain plasma, the lymphatics contain lymph, and the tissue spaces contain tissue fluids.

The lymphatic system merits an objective point of view which recognizes it as an integral part of the afferent circulatory system.

The lymphatico-venous return then constitutes the afferent side of circulatory balance. The diagram of the lymphatic system, shows the great number of lymphatic vessels of the leg and thigh, both in the superficial group and in the deeper set. Eventually both superficial and deep lymphatics drain into the same regional lymph glands.

Elephantiasis

Simple lymph edemas are the result of stasis.

Conclusion

In presenting these instances of Circulatory Disturbances of the extremities, my purpose is to emphasize 2 rather neglected points:

1. The great collateral circulation characteristically present in thrombo-angiitis obliterans;

2. The significance of lymphatic function in the mechanism of circulatory balance."

- Dr Frederick Leet Reichert, MD in "Circulatory disturbances of the extremities", California and Western Medicine, 1929.

Traumatic Hydrocele

"The term "Traumatic Hydrocele", is as unscientific a misnomer as is "Typhomalaria Fever," and should likewise disappear from medical literature.

Inflammation, with a resultant blocking of the lymphatics of the scrotum, is the cause of acute hydrocele, while low-grade infection, repeated slight traumas, or prolonged irritations may eventually result in a chronic hydrocele.

However, when an enlarged scrotum is noticed, the insurance claimant eagerly remembers some slight injury to which he can attribute it, and generally a diagnosis of "traumatic" orchitis or hydrocele follows promptly.

Any inflammatory process which interferes with the lymphatic drainage of the tunica vaginalis may cause a hydrocele.

Hydrocele is due to an inflammatory blocking of the draining lymphatics, secondary to disease of the scrotal contents.

The only satisfactory scientific way to handle a hydrocele is to first cure the underlying condition responsible for the blocking of the lymphatics." - Dr Miley B. Wesson, MD in "Traumatic Hydrocele, an analysis of 30 cases", California and Western Medicine, 1929.

"Dr. J. A. MacKenty, MD said: He had had recurrences in loco from 6 to 17 years after laryngectomy, showing that cancer infection may remain dormant for years in the local lymphatics and break out only when these areas are subjected to strain from some other infection. He had seen melanotic sarcoma on the cervical and inguinal glands, large dark masses showing through the skin, lie dormant for 5 years and then overwhelm the patient in a few weeks.

Dr. Franz Torek, MD said that in cases of extrinsic cancer removal of the larynx is the only operation to be considered. The importance of the removal of lymph nodes involved by the carcinoma is well understood at the present time, although not many years ago this fact was not fully realized.

It must not be believed that even after thorough removal of the lymph nodes one can be sure of non-recurrence in nodes, but the percentage of cures is enlarged if the removal of the lymph nodes is radical." - in "Annals of Surgery", Jan-Jun, Vol. XCIII, 1931.

Allergic Sinusitis

"**The lymphatic system arises in the phylogenetic scale of life as it becomes necessary to remove from the body substances not readily absorbed by the blood. Its primary function is removal of components of extravascular fluid in the lymph bed. Alterations of this activity, usually produced by some type of lymphatic blockage or lowered tissue pressure, lead to stagnation of fluid in the interstitial tissue spaces. Tissue fluid stagnation in the lymph bed of the mucosa of the paranasal sinuses plays a part in the pathogenesis of allergic sinusitis.**" - Dr J.Mathews Robison, MD, in "The Journal of Allergy", Vol.17, No.2, March 1946.

Lymph-Stasis, Precursor in the Aetiology of some Forms of Cancer

"The Origin of Many Celled Organisms; Cancer is an atavistic reversion of certain cells of the body to the state of their primitive one-celled ancestors.

The cancer cell is a selfish unicellular organism, derived by direct descent from the cells of the body, but living among them as a parasite.

Early x-ray epitheliomata have a tendency to remain localized for a long time, and only disseminate when they have advanced by infiltration into regions where the lymphatics are still intact.

In these respects they resemble lupus cancer, which is certainly conditioned by lymphatic obstruction.

Yamagiwa and Itchikawa state that:

> ***"Repeated simple chemical and physical irritation renders the normal epithelial cell cancerous, without any necessity to invoke another unknown causal agent."***

The Pathogenesis of the Papilloma

The central structure of every papilla of the skin or the mucous membrane is a lymphatic capillary exactly like the lacteal vessel of a papilla of the small intestine.

I have demonstrated this by direct lymphatic injections of the skin, as well as by a study of diseases affecting the skin lymphatics.

Papillary hypertrophy occurs, and only occurs, when this central lymphatic vessel of the papilla is blocked.

The papilla is a little physiological engine. From its blood capillaries there exudes into its connective-tissue spaces a constant nutritive stream of diluted blood plasma at a certain pressure. The excess of fluid is renewed and the equilibrium maintained by the drainage action of the central lymphatic.

Block this lymphatic and what will happen?

1. The first effect will be a rise in the pressure in the intercellular spaces of the papilla, and on ordinary hydraulic principles the papilla will increase in size until the intercellular pressure is equal to the pressure in the capillary blood vessels.

2. A second effect will be over-nutrition and consequent proliferation of the papilla itself and of the overlying epithelium. In the normal papilla a constant stream of blood fluid, along with lymphocytes, is exuding from the capillaries and passing away by the lymphatic.

As soon as the lymphatic is blocked, stasis occurs and the flow of fresh blood fluid through the papilla is arrested or greatly retarded, even though just as much blood may be passing through its blood capillaries.

Two consequences are inevitable:

1. The supply of oxygen to the tissues of the papilla, to its epithelium as well as to its connective tissue, will be much reduced.
2. The supply of hormones to the cells of the papilla will be cut off or greatly diminished.

In this connection I use the term "hormone", to signify those products of the rest of the cells of the body which are necessary to the well-being of the cells of the papilla we are considering.

Local lymphatic stasis brings about a definite rupture of the contract in virtue of which the unicellular organism originally forswore its egotism and became a social unit.

Or, in the terms of biochemistry, the epithelium covering the papilla is deprived of the supply of growth inhibiting substance, which in a well-conducted cell community is circulated to every cell.

This fact indicates that persons who recover from an attack of tubercle are likely in later life, and as a consequence of their attack of tubercle, to die of cancer.

Since every tuberculous infection is of the nature of a chronic lymphangitis, and must leave behind it some degree of lymphatic obstruction, Dr. Cherry's facts, derived from the whole mortality experience of England over a long series of years, offer a startling suggestion of the importance of tubercle, and hence of lymphatic obstruction, in the aetiology of cancer.

Any pathological process which gives rise to lymphatic obstruction may be a cause of cancer. The specific factor is not the particular organism concerned, but the lymphatic obstruction to which that organism may give rise.

The tubercle bacillus is not the only organism which finds itself at home in the sluggish stream and quiet backwaters of the lymphatic vessels." - Dr W. Sampson Handley, MS, FRCS, Surgeon to the Middlesex Cancer Hospital, London, in "Lymph-Stasis The Precursor of Cancer", The Canadian Medical Association Journal, Vol. XXI, November 1929.

The Role of Lymph Stasis in the Genesis of Cancer, The Evidence of Lymphangitis in Papillomata

"It cannot be doubted that the improved position of the subject is largely due to Professor Ewing and to that great piece of organization, his work on "Neoplastic Diseases."

The evidence that cancer arises in districts where for long years there has been a local lymph-stasis, impairing the nutrition of the cells, was first stated in the paper "Lymphatic Obstruction as a Factor in the Causation of Cancer", 1926.

In accord with the view that lymph-stasis is the great general physiological factor which lays the foundations of cancer, is the flood of evidence coming from many quarters that papilloma or adenoma is the precursor of carcinoma of every variety.

This is universally the case in the occupation cancers such as sweep's and paraffin cancer, in cancer due to parasites such as gongylonema or bilharzia, in the experimental cancers due to tar or X-rays, and **evidence is continually increasing that large clinical categories of cancer, such as cervical cancer, breast cancer, rectal cancer and gastric cancer, are preceded by papillomata or adenomata.**

The papilloma or papillary adenoma is the characteristic product of local lymphatic obstruction.

The action of such varied chronic irritants all producing the same final result receives for the first time an intelligible explanation.

They act by setting up a local chronic obstructive lymphangitis of the part to which they are applied, which leads after a time to the production of warts, or adenomata, and after a further interval to the genesis of a carcinoma.

Congenital malformation of lymphatics, seen in moles or naevi, also produces lymph-stasis, warts and sometimes carcinoma." - Dr Sampson Handley, MD in "Annals of Surgery", 1931.

Lymph Stasis and Cancer

"In such a tangle of miscellaneous causes it is fair to assume that links in the chain of causation are missing, and that as the final result; cancer, is approached unity of causation might be detected.

I believe that in lymph stasis and its physiological consequences I have found the single immediate cause of cancer.

All the various cancerogenic agents have this quality in common that they can produce lymphangitis and consequent lymphatic obstruction.

I have been able to demonstrate the presence of lymphatic obliteration and consequent lymph stasis in precancerous areas due to the ravages of syphilis,

tubercle, X rays, radium, or resulting from the chronic lymph stasis of chronic mastitis.

No single organism is specifically and exclusively associated with the production of cancer.

Any physical or chemical agent, any organism or mixture of organisms, able to cause lymphangitis, may set going a process which in 10, 20, or 40 years may eventuate in malignancy.

Lupus Cancer

Just as a lacteal is the central structure of an intestinal villus, a capillary lymphatic end-sac is the central structure of a villus of the skin.

Evidently lupus is essentially a tuberculous lymphangitis of the skin lymphatics.

Furthermore it can be seen that the blocking of the central lymphatic has upset the hydrostatic arrangements of the papilla.

The tissue fluid can no longer flow freely out of it and the papilla begins to swell and to elongate.

From the edge of the specimen back towards the centre of the lupus area a gradual elongation of the skin papillae up to 10 times their normal length can be traced. Their connective tissue receives from this lymph congestion a powerful stimulus to proliferation in which at a later date the epithelium shares.

How powerful is the nutritive stimulus of lymphatic obstruction upon the tissues subjected to it is well seen on a large scale in the huge legs of elephantiasis.

Wherever a papilloma is found it may be presumed, and it can frequently be demonstrated, that this process of obliterative lymphangitis has previously affected the lymphatics of the papilla.

It is a fact of the highest significance that nearly every form of cancer affecting squamous celled, transitional or columnar-celled surfaces is preceded by papilloma.

In the case of glandular mucous membranes such as that of the stomach, cancer is preceded by adenoma, which is also a manifestation of lymphatic obstruction." - Dr W. Sampson Handley, FRCS, in "The Prevention of Caner", The Lancet, 2 May 1936.

(See: Chronic Mastitis & Prevention in the Light of Aetiology in the Book "Unknown Causes of Disease, or the Idiopathic Nature of Medicine", 2021)

Chapter 64

Status Lymphaticus

"Status Lymphaticus: A combination of constitutional anomalies among which are hyperplasia of the lymphoid tissues and of the thymus, hypoplasia of the cardiovascular system and peculiarities of configuration. *Formerly the condition was regarded as specially important in young children." Dr Osler, MD in "The Principles and Practice of Medicine", 1938.*

Sudden Death Associated with Enlarged Thymus

"The analysis of the ten cases recorded demonstrates, with the exception of Case 8, when life was cut short by fractured base following an accident, the coexistence of sudden and unexpected death from apparently trivial causes with an enlargement of the thymus, and frequently of the systemic lymphatic glands and lymphoid follicles of the alimentary canal. Out of the 10, 4 were males and 6 females: their ages ranged from 6 months to 22 years.

Three died while under an anaesthetic: in 2 cases the anaesthetic used was chloroform, in the third case A.C.E. mixture.

In all, with the exception above noted, death was accompanied by respiratory failure.

In all, with the exception of the boy suffering from Addison's disease, and to a certain extent the girl suffering from myasthenia gravis, the general condition was excellent and above the average.

The thymus gland varied in size, and was in every instance a well-formed active structure, showing no trace of retrogression or atrophy.

The lymphoid enlargements exhibited no constancy, but it will be noted how frequently enlargement of the glands in the posterior triangles of the neck is seen in the case of the infants, while enlargement of the mesenteric glands is almost invariably present.

At the same time, in certain instances, the enlarged glands resembled haemolymph glands. It is to be deplored that systematic histological examination of all the enlarged lymphoid structures was not carried out; but, in the cases where such investigation was performed, no evidence of tuberculous infection was obtained, except in Case 7, the condition found in all the other cases being a simple hyperplasia of the lymphoid tissue with no indications of inflammation, even in the Peyer's patches.

In Cases 4, 5, 6, and 7 small yellow areas of fatty necrosis were found on the surface of the liver, extending for a slight distance into its substance; no importance was attached to these, since they are found from time to time in post-mortem examinations in deaths from various causes.

Rolleston (1909), records a case of death from compression of the trachea by an enlarged thymus in a child age 10 months, where both spleen and liver showed fatty changes.

In Cases 4 and 5 it was noted that, although the ages were 6 and 10 months respectively, the ovaries were distinctly enlarged and, moreover, contained small cysts with clear fluid contents; on microscopic investigation they were found to be lined by a single layer of low columnar epithelium; it is difficult to determine what weight to attach to this condition.

With the exception of Cases 3 and 7, where there was some slight degree of enlargement, the thyroid glands throughout the series were not hypertrophied or diseased.

The enlargement of the glands in the posterior triangle of the neck in Case 8 may be associated with the coexisting follicular tonsillitis.

The suprarenals were definitely tuberculous in Case 7, and the right suprarenal was much reduced in size in Case 9, otherwise these glands were found to be normal in every particular.

Splenic enlargement wag not a feature of the series, though the Malpighian corpuscles were well marked in certain of the cases. In none of the cases recorded did the thymus extend backwards or upwards; in all it extended as a bilobed gland well over the pericardium.

Furthermore it will be noted that in Case 1, where the majority of the organs were deeply congested, the thymus did not share in the congestion, nor did it show signs of distension, which might, under certain circumstances, be adduced as evidence of compression of the neighbouring structures.

Systematic examination of the thymus in successive post-mortem examinations has not, in my experience, conduced to the belief that the thymus functionates till puberty (Noel Paton, 1913, Halliburton, 1913). In autopsies, conducted upon subjects varying in age from a few hours after birth onwards to old age, one has found definite and decided atrophy of this gland, most often practically complete disappearance.

Very occasionally a thymus in process of atrophy is met with, but it is always extremely flat, differing essentially in this respect from the appearance of the gland in the cases recorded in this series.

A case illustrating this condition is that of E. G., a boy age 2 years, who was brought into hospital to be operated upon for strangulated inguinal hernia; unfortunately post-operative cellulitis developed in the region of the inguinal canal, and he died. Post-mortem, he was found to be well nourished and well developed.

The thymus was present as a bilobed gland extending for 29 inches over the pericardium, but it was noticeable that it was much flattened, and, on microscopic

examination, presented, in comparison with a section through an enlarged thymus in status lymphaticus, a considerable degree of fibrosis and vascularisation, together with a definitely marked increase in the number of Hassall's corpuscles-whatever significance may be attached thereto.

In this case, also, there was no enlargement of any of the lymphatic structures of the body, and the testes, apart from the left which was involved in the cellulitis, were perfectly normal.

In Cases 1, 4, 5, 6, and 9,exhaustive inquiries were made in order to ascertain if there had existed any symptoms or peculiarities during life which might have aided the clinician to diagnose the condition, but in no instance was any information forthcoming to this end; indeed, all without exception had enjoyed excellent health, and, in addition, not one had suffered from attacks of dyspnoea.

The only case suggesting pressure on the trachea during life was Case 10, where there was a 5 weeks history of "croupy cough", possibly clue to the thymus, which measured 4 inch in depth at the root of the neck.

The general health of the parents, so far as one was able to judge, was above the average, while that of the remaining children was also good.

Moreover, no information could be obtained which might lead one to infer that the condition was in any way associated with the mode of living or the environment, the cases certainly occurred amongst the poorer classes, as is largely the case in hospital practice.

The occurrence of some injection and thinning of the mucous membrane of the ileum in Cases 2 and 3 was noted, but no significance contents of the bowel.

The coexistence of enlarged thymus with myasthenia gravis, as illustrated in Case 3, has been referred to by Buzzard (1905), who states that:

> *"Although the occurrence of a thymus gland of unusual size or with pathological features is not a constant factor, yet* ***its frequency is so considerable that it will he impossible to disregard it in discussing the pathogenicity of the disease."***

It is to be remarked that in no case in this series were any sub-pleural ecchymoses or ecchymoses of the thymus observed, a condition reported by Brouardel and Bexham (1902), to occur in cases of sudden death accompanied by thymic enlargement.

In studying the literature of the subject one is struck with the numerous theories put forward to explain the occurrence of sudden death associated with thymic enlargement.

They have been summarised by Jackson (1907), as follows:

Firstly, thymic enlargement is an index of general lymphatic dyscrasia, which entails enfeeblement; and, secondly, the enlarged thymus acts mechanically on the air-passages, interferes with the vagus nerve, or excites reflex spasm of the glottis.

With regard to the first theory, I suggest that the list of cases I have brought forward deals effectively with the supposition that status lymphaticus is

necessarily associated with feebleness of constitution.

In the Lancet, London, 1908, p. 1369, is described a case of a boy, age 8 months, who died after an attack of convulsions.

At the post-mortem examination it was found that he was both well nourished and well developed. The thymus, which weighed 1 oz., extended for 2 ½ inches over the pericardium, with prolongations posteriorly enveloping the trachea. Enlargement of the abdominal glands, especially the mesenteric, and also of the lymphoid follicles of the intestine coexisted.

In the cases I have detailed it will have been observed that the so-called "thymic death" is accompanied by cessation of respiration, followed eventually by cardiac failure.

The condition of the thymus in cases of sudden death in infants, following convulsions, deserves careful record.

Many young children have attacks of this description following such excitory causes as digestive disturbances and onset of teething, but, whereas the attacks are usually transient, in a certain number of cases they terminate fatally.

Case 6, in this series, is a good example of such fatal termination associated with Status Lymphaticus, and, possibly, Case 10 may be included in this category." - Dr E. Emrys-Roberts, MD in "Status lymphaticus", Journal of Pathology, Vol. 18, 1913.

"Whether the original affection of the appendix be catarrhal, ulcerative, or gangrenous, with or without the presence of a foreign body, it is evident that secondary results may follow from extension of the inflammation to the surrounding structures, leading to adhesion of the appendix and caecum, or of the neighbouring viscera - the one to the other. ***Secondary structural change may ensue from destructive changes in the appendix and adjoining caecum, or from absorption of sepsis or tuberculosis the lymphatic glands may become so enlarged as to give rise to trouble. In acute cases of appendicitis, no doubt, the lymphatic glands are implicated, but, as elsewhere in the body, the local inflammation and its consequences masks the glandular inflammation.*** *In subacute forms of appendicitis, however, as for example in the chronic ulcerative type, such glandular enlargement may assume considerable importance, and may even be readily mistaken for malignant tumour at the ileo-caecal valve or neighbourhood.*
Especially is this the case when partial obstruction takes place from pressure on the ileum by the projecting mass of glands." - Dr T. Kennedy Dalziel, MB, CM, FFPS, Surgeon in "Some Remote Effects of Appendicitis", Glasgow Hospital Reports, 1898.

Hyperplasia of the Lymphatic Structures of the Body

The Lymphatic Constitution and its Relation to some Forms of Sudden Death

"Under the term Constitutio Lymphatica have rather recently been described a series of cases presenting a characteristic hyperplasia of the lymph nodes (Hyperplasia, enlargement of an organ or tissue caused by an increase in the reproduction rate of its cells, often as an initial stage in the development of cancer), spleen, thymus, and often of the lymphoid marrow, associated with hypoplasia of the heart and aorta, and frequently also with rickets (rickets: all organs of the body suffer from the effects, the essential lesions are in the bones).

These pathological conditions have been found especially in cases of sudden death, from a variety of causes, and are believed by many to indicate in these subjects diminished vital resistance and special liability to sudden cardiac paralysis.

The importance of the Constitutio Lymphatica and its relation to some forms of sudden death, especially to fatalities under chloroform narcosis, have been recognized for several years by the Vienna school of pathologists, but have received very scant attention elsewhere.

The English word rickets is usually written in technical language, rickets; a name first given to it by Glisson, and said to be derived from flaxis (rhachis), the spine, in consequence of the distortion and curvature of this organ.

Consideration of the Separate Features of the Constitutio Lymphatica

The observations which have resulted in the present views of the lymphatic constitution have been accumulating for a long series of years, and have had reference to a great variety of abnormal conditions or distinct diseases.

The very wide scope of these observations, moreover, while largely responsible for the present uncertainty as to the real limits of this term "lymphatic constitution," is yet strong a priori evidence that it represents an important fact in pathology.

These observations have been drawn from the study of chlorosis, leucaemia, pseudo-leucaemia, and haemophilia in the province of the blood, of congenital hyperplasia and hypoplasia of various organs and tissues, of enlargement of the thyreoid gland, with or without Basedow's disease, of enlargement of the thymus, of rickets, of the fatal effects of chloroform narcosis, and of the large class of cases of sudden death without organic lesions coming under the notice of medical jurists.

In all of the above conditions it has long been apparent that there was frequently associated a systemic weakness which, among other things, rendered the subject liable to sudden heart failure and death under a variety of apparently inadequate exciting causes.

The anatomical features which are at present believed to characterize the subjects of the lymphatic constitution include hypoplasia of the heart and aortic system of vessels, partial or general hyperplasia of the lymphatic organs, the spleen, thymus, lymph nodes, and the lymphoid or red marrow.

There may also be evidences of rickets.

The hyperplasia of the lymphatic structure of varying extent is the most constant and the essential characteristic, hypoplasia of the heart and aorta is frequently added, and evidences of rickets are present in the majority of instances.

Enlargement of the thyreoid appears so frequently in the reports of recent cases as to call attention to the possible importance in the morbid condition of changes in this organ.

Hypoplasia of the Heart and Aorta

One of these conditions earliest studied is the hypoplasia of the heart and blood-vessels, first claimed by Virchow to be the fundamental pathological condition in chlorosis, and known to be frequently associated with certain other abnormities in the blood and blood-vessels.

The diminished vital resistance of such subjects and their liability to secondary organic diseases were regularly noted by medical writers between 1860 and 1880, and special contributions, with illustrative cases, were made by various authors, such as Wunderlich, Riegel, Kulenkampff, and Kussner. More recently, Handford, Leyden, and Fraentzel have pointed out the frequent connection of arterial hypoplasia with cardiac disease.

Rokitansky, Virchow, Riegel, and Bruberger have reported cases of rupture of these imperfectly developed vessels.

Virchow's theory of the origin of chlorosis (anaemia) was supported and further extended to hemophilia by the observations by Copeland and Bamberger of the coincidence of both of these diseases of the blood with congenital narrowing of the aorta.

Otto and Rokitansky noted the frequency with which this anomaly was associated with hypoplasia of other tissues and organs.

A case of this description has recently been reported by Israel. Recklinghausen found a general infantile grade of development in a woman of 25 years dying of acute phthisis, and showing in addition to hypoplasia of heart and aorta, a patent foramen ovale, a persistent thymus, lobulated kidneys, and infantile pelvis and sexual organs. The diminished resistance of these subjects to infectious diseases has been observed in cholera by Virchow, in pneumonia by Ortner, in typhoid fever by Fraentzel, Virchow, and Benecke. In two cases of sudden death during convalescence from typhoid fever, Hiller found uniform narrowing of the aorta.

Ortner endeavours to explain the fatal course of some reported cases of anaemia after complete removal of the cause, the Bothriocephalus latus, by the coexistence of a narrow aorta and undeveloped sexual organs, which were found at autopsy in these cases.

Sufficient evidence has been reviewed to show that hypoplasia of the heart and arteries, which is a prominent anatomical feature of the constitutio lymphatica.

For the present purpose it need only be claimed that the existence of this abnormity is in itself a probable ground for the belief that the subjects of the constitutio lymphatica possess inferior vital resistance.

Hyperplasia of the Lymphatic Organs

The hyperplasia of the lymphatic structures of the body is a more recent contribution to the pathology of this form of diminished vital resistance, and the demonstration of its essential importance has served to correlate many facts previously known, and to justify the employment of the old term constitutio lymphatica revived by A. Paltauf for the general condition.

That some underlying constitutional defect must he assumed to exist in order to account for many sudden deaths usually referred to the pressure of an enlarged thymus upon the trachea, bronchi, or great vessels, was the conclusion reached by Paltauf and others from a long experience with this class of cases at the Institut fur gerichtliche Medicin in Vienna.

Hypertrophic thymus gland can produce fatal laryngismus.

Many writers still claim that death in these cases is produced either by direct pressure of the enlarged thymus upon the bronchi or great vessels, or by reflex cardiac or respiratory paralysis arising from the thymus.

The observations of Paltauf convinced him that many of these fatalities, especially in infants, must he referred to a capillary bronchitis, of which the post-mortem evidences are often very meagre, and the observations of Paltauf, Hoffmann, and Kolisko have led them to believe that all the others are referable to a peculiar constitutional defect, of which an expression is to be found in general hyperplasia of the lymphatic structures.

In the experience of these observers, the enlargement of the thymus in these cases is only one feature of a general lymphatic hyperplasia, involving also the spleen, the tonsillar ring, the thoracic and abdominal lymph nodes, and sometimes the bone marrow.

Moreover, an examination of the cases of "thymus Tod" reported by earlier writers, even those of Friedleben, discloses the fact that in the majority of instances it was noted that the tonsils, spleen, and lymph nodes were more or less hypertrophic.

The same observers noted a similar condition of general hyperplasia of the lymphatic structure of the body in a series of sudden deaths during chloroform narcosis.

Pathological Changes in the Lymphatic Structures

The thymus frequently measures from 6 to 10 cm in length, reaching at times from the middle lobe of the thyreoid to the heart's apex. Its consistence may be

increased or it may be soft and exude on section a milky white fluid.

It has been found adherent to the pericardium, and often encircles more or less completely the great vessels. The blood content of the organ is often found increased, and its surface or section may present the petechias characteristic of death by asphyxia.

The histology of the enlarged gland indicates usually a simple hyperplasia of the lymphoid cells, enlarging and multiplying the follicles, sometimes causing the deposit of small nodules of lymphoid cells in the centres of lobules, in the trabeculae, or even in the outlying adipose tissue.

The enlargement of the spleen is of moderate grade, and is referable to a simple hyperplasia of the lymphoid elements, with hypersemia. The enlarged Malpighian bodies being usually devoid of blood and light coloured, are prominently set off from the liyperaemic pulp, giving an appearance not unlike that of miliary tubercles.

In some cases the lymphoid cells are so much increased as to infiltrate the splenic pulp, and the microscopical outlines of the follicle are then indistinct.

The pulp cells may contain an increased deposit of blood pigment, of which condition one of the present cases furnishes an extreme example.

The lymph nodes most frequently affected are the pharyngeal, thoracic, and abdominal chains.

The faucial and lingual tonsils are nearly always enlarged, the new cells not always being confined to normal limits, but sometimes forming a diffuse infiltration of the mucous membrane about the original follicles. From the lingual tonsil the infiltration may involve the epiglottis and sinus pyriformis.

The cervical, mediastinal, and axillary nodes may be moderately enlarged, especially along the course of the great vessels.

Tubercular lymphadenitis has been observed (Bayer).

The abdominal lymph nodes, especially those of the intestine and mesentery, are usually strikingly enlarged.

In one of the present cases some of the Peyer's patches measure 9 to 11 cm in length, and their follicles and the solitary follicles project very prominently above the surface of the mucosa.

The swollen mesenteric nodes may remain entirely discrete, or, as in the present case, they may form a solid mass of lymphatic tissue, in which the separate nodes are closely applied one against the other, although the capsules remain intact.

The enlargement is due to a simple hyperplasia; the lymph paths appear for the most part undisturbed, but the adjoining connective and adipose tissue may contain a moderate deposit of new lymphoid cells.

The retroperitoneal nodes are often affected. The mesenteric nodes may be enlarged when the intestinal follicles appear normal.

The nodes of the entire gastro-intestinal tract are frequently involved in the hyperplasia. The inguinal, popliteal, axillary, cervical, supraclavicular, and infraclavicular nodes may be moderately enlarged.

Small collections of lymphoid cells have been found in the thyreoid gland,

which is frequently enlarged in these cases. Similar collections of lymphoid cells were noted in the capillaries of the liver in one of Kundraffs cases, aged 15 years.

In 3 of Kundraffs cases, aged 15, 24, 31 years, red marrow was found in the shaft of the femur.

In only 1 of these cases, however, does it seem certain that this unusual condition represented a true lymphoid hyperplasia, as in Case II, in which there was noticeable atrophy of fat cells and more or less diffuse lymphoid tissue in the marrow, containing neutrophile and eosinophile myelocytes and dense nodules of lymphoid cells.

The marked variability of the character of the bone marrow in the femur has been amply demonstrated by the extensive studies of Grohe, and of Litten and Orth.

Relation to Pseudo-leucaemia

Such a general and extensive hyperplasia of the lymphatic structures of the body at once suggests a possible connection with leucaemia or pseudo-leucaemia.

The resemblance to these diseases is especially evident in those cases showing extensive enlargement of the mesenteric nodes or diffuse infiltration of mucous membranes with lymphoid cells, or collections of lymphoid cells in unusual situations, as in the hepatic capillaries and thyreoid gland.

The destruction of red blood-cells characterizing these diseases has been approached in cases of the lymphatic constitution, as indicated by the deposit of blood pigment in the spleen and lymph nodes, a condition well marked in the spleen in one of the writer's cases.

Koeppe reports a similar case in which the deposits of pigment were very extensive, and also notes an increased number of leucocytes in sections of many vessels, without stating the character of the leucocytes, an observation to which it seems hardly possible to attach any significance.

In one of the writer's cases 84%, of a considerably increased number of leucocytes in a pial vein were small and mononuclear.

Ortner observed in one case a lymphocytosis at a time when it was not known that a lymphocytosis is usually found in the blood during the second week of typhoid fever.

In 3 of Kundrat's cases the extent of lymphatic hyperplasia might have sufficed for an early stage of leucaemia.

But even these many isolated points of resemblance constitute no distinct indication that the constitutio lymphatica has any immediate connection with pseudo-leucaemia or leucaemia.

Comparing the enlarged intestinal follicles in the writer's first case with the intestinal lesions of some undoubted cases of pseudo-leucaemia, characteristic differences were noted.

The small nodules of new lymphoid tissue in the latter disease grow laterally for some distance before producing much elevation of the mucosa, while in the

former the enlarged follicles are very shortly circumscribed and very early project above the surface of the surrounding mucosa.

The nodules in pseudo-leucaemia frequently ulcerate at their central points owing to deficient blood supply, a tendency entirely lacking in the enlarged but well vascularized follicles in the former condition.

In most cases of pseudo-leucaemia of intestinal type there are some distinctly pedunculated polypoid outgrowths, considerably exceeding in size any of the hyperplastic nodules yet reported in cases of the lymphatic constitution.

In the majority of the cases of lymphatic constitution the enlargement of the lymph nodes does not pass beyond the limits of what may be called a physiological hypertrophy, and bears little resemblance to a tumour formation.

The spleen is rarely much enlarged.

The presence of considerable pigment in the spleen pulp is too ordinarily seen to be interpreted positively as the result of an excessive blood destruction, such as characterizes the severe anaemias.

Yet it must be admitted that the very considerable degree of pigment deposit reached by the 2 cases referred to above indicates that in some instances the blood has suffered severely.

These children are, however, not usually anaemic, but in excellent health, and even the sickliest of them do not resemble cases of infantile leucaemia, pseudo-leucaemia (von Jaksch), or chlorosis.

As for the hyperplasia of the lymphoid marrow, it may be said that the normal limits of lymphoid marrow are as yet by no means definitely settled.

Such hyperplasia may be seen also in the secondary anaemias, and in any case the hyperplasia of the lymphoid marrow may be regarded as merely a part of the general and more or less physiological hypertrophy of the lymphoid structures of the body.

It might he expected that a general lymphatic hyperplasia would lead to a lymphocytosis.

Nevertheless, it must he regarded as possible that the persistent lymphocytosis of childhood may at times he a tangible expression of general lymphatic hyperplasia and of the lymphatic constitution.

Relation to Rickets

In a considerable proportion of the reported cases of constitutio lymphatica more or less pronounced evidences of rickets have been found.

Professor Kundrat described as primary vegetative disorders those anomalies of growth whose cause we do not know, and which we must refer to a congenital predisposition.

Rickets he specially emphasizes as representing not only a disturbance in bone formation, hut a profound and general vegetative dyscrasia (abnormal state of the body).

This view of the pathology of rickets, which is, of course, the one in general

acceptation, is here mentioned in order to emphasize the fact that the coincidence of rickets, which is not an essential feature of the lymphatic constitution, must be regarded, with the hypoplasia of the heart and arteries, as further evidence of some deepseated constitutional weakness.

It is interesting in this connection to recall the fact without speculating upon its significance, that a large percentage of children with rickets have a hypertrophic spleen, which is, however, according to the recent conclusions of Starck, not uniformly proportionate to the grade of rickets, hut rather to the degree of anaemia.

The coincidence of rickets and enlargement of the spleen with hyperplasia of lymph nodes, especially the mesenteric nodes, was long since noted by Dickinson and Glisson.

Significance of Enlargement of the Thyreoid in the Lymphatic Constitution

In 9 of the 17 cases collected by Kundrat, in 3 of 7 referred to by Paltanf, and in 1 of the writer's 2 cases, i.e., in more than 50%, of 26 cases, the thyreoid gland was found enlarged.

Of the significance of the goitre in this connection it is rather difficult to judge.

There is, however, abundant evidence to show that some sympathetic relation exists between the thymus and thyreoid.

Beclard found an enlargement of the thyreoid after extirpation of the thymus, and enlargement of the thymus after extirpation of the thyreoid, in animals capable of surviving the loss of these organs.

As shown by Kundrat, enlargement of the thymus has been found in Basedow's disease by Mobius and by Spencer, and hypertrophy of lymph nodes, tonsils, and intestinal follicles has been noted in the same disease by several observers (White, Gowers).

The liability to sudden cardiac paralysis, which is often the prominent feature in the death of subjects of the lymphatic constitution, finds at least a partial counterpart in the persistent tachycardia of Basedow's disease.

Exciting Causes and Manner of Death of Subjects of the Lymphatic Constitution

The majority of cases thus far reported have died as the result of chloroform narcosis (a state of stupor, drowsiness, or unconsciousness produced by drugs).

One case reported by Heusler died after ether narcosis and the loss of considerable blood.

Death may apparently occur at any stage of the narcosis, during the first few inhalations or even after apparent recovery from the effects of the ansesthetic.

Two patients survived a first administration of chloroform to perish some months later during a 2nd or 3rd operation.

The usual signs of danger may be observed; the patients may respond to treatment for a time, and a few feeble respiratory movements may be elicited for some moments, or for a considerable period, or the cardiac and respiratory paralysis may be instant and complete.

In all of these particulars these cases have presented no distinguishing peculiarities.

Seven reports by Nordmann and Paltauf refer to the sudden death of persons who fell into the water, and although immediately recovered were yet dead, or who died suddenly while bathing.

In none of these cases were the ordinary signs of death by drowning to be found, but the usual evidences of the constitutio lymphatica were present.

Other persons died suddenly during the excitement of card playing, or fell dead on the street while engaged in ordinary exertions.

The sudden death of the young son of Professor Langerhans, of Berlin, immediately after the injection of a preventive dose of diphtheria antitoxine has called forth considerable discussion as to the probable cause of this sudden fatality, and has been variously explained by Langerhans.

Eulenberg, and Purkhauser, Paltauf suggests that this and other similar cases may find their true explanation in the presence of the constitutio lymphatica.

It seems probable, from the considerations relating especially to hypoplasia of the heart and arteries, that some rapidly fatal forms of the infectious diseases, and some sudden fatalities during convalescence from these diseases, may be in part referable to the constitutio lymphatica.

The manner of death usually indicates a cardiac paralysis, which may or may not be combined with immediate failure of respiration.

That the cardiac muscle in these subjects is specially susceptible to the effects of chloroform may naturally be supposed.

The subjects of the lymphatic constitution, for unknown reasons, are specially susceptible to reflex cardiac paralysis.

The Diagnosis of the Lymphatic Constitution

Since it is claimed that the majority of deaths from chloroform are referable to the constitutio lymphatica, it becomes a matter of importance to be able to recognize the condition during life.

It may be possible, first, to elicit physical signs indicative of hypoplasia of the heart and aortic system of arteries.

Fraenkel, Rauchfuss, and Quincke call attention to the dilatation of the left ventricle, which usually results from a narrowing of the aorta.

They also recommend the examination of the peripheral arteries, which may be found distinctly narrowed and of increased tension.

Ortner has noted in his cases of narrow aorta an absence of aortic pulsation in the neck, which he regards as a pathognomonic sign of hypoplasia of the aorta, if found in a muscular subject.

Hypoplasia of the heart and arteries is frequently associated with an infantile or defective development of other organs and tissues, especially of the sexual organs, the condition of which it may therefore be well to ascertain.

In some of the reported cases the diagnosis was suggested by the absence of pubic hair, by the very late establishment of menstruation, and from a uniformly contracted condition of the pelvis.

Yet even granting that attention to the above minutiae may occasionally give rise to a strong suspicion of hypoplasia of the aorta, it is not to be supposed that every case actually presenting this anomaly is a subject of the lymphatic constitution, so that, practically, the diagnosis of this anatomical feature will usually be restricted to the post-mortem table.

Likewise, the prevalence of rickets is too general to warrant more than a suspicion that this disease may be associated with the lymphatic constitution, and its presence can only serve as a warning that the 2 conditions sometimes coexist, rendering the subject a dangerous one for the administration of chloroform.

Of greater diagnostic import is the discovery of a general or local hyperplasia of the superficial lymphatic structures.

Enlargement of the faucial, lingual, or pharyngeal tonsils, especially if accompanied by enlarged cervical, axillary, or inguinal lymph nodes, should at once arrest attention.

In one of Kundrat's cases there were distinct flat deposits of lymphoid tissue along the base of the tongue and about the epiglottis, and in another the retropharyngeal nodes were moderately enlarged.

In one of the writer's cases the enlarged mesenteric nodes formed a tumour like mass that could readily have been detected by abdominal palpation.

In young subjects it may sometimes he possible to elicit dullness from the enlarged thymus.

The demonstration of a well-marked lymphocytosis in one of the writer's cases, a condition which may reasonably be expected to frequently accompany general lymphatic hyperplasia, suggests that the examination of the blood may give a reliable indication in some cases of the constitutio lymphatica.

The lymphocytosis of early life, which has been rather frequently observed, has as yet acquired little or no significance, and although the suggestion is based upon a single observation, that alone would seem sufficient to urge that the condition of the blood should he noted in every suspected case.

The studies of the Vienna observers seem to have placed the existence of the constitutio lymphatica upon a firm basis in pathology." - Dr James Ewing, MD in "New York Medical Journal", 10 July 1897.

Chapter 65

Toxaemia

"Whatever difference may appear in diseases, whether in their symptoms or in their seat, there exists, among a great number of them, this analogy, *that if we compare the treatments adopted by the most able practitioners, recommended by the most justly-celebrated authors, and crowned with the least equivocal success, we shall find them founded so much on one and the same basis* ***(Intestinal Derangement)****, and directed so much by one and the same method* ***(the cure of that derangement)****, that we imagine we are reading one sole and same treatment, or that of only one disease, a treatment which is diversified according to the intensity of the disorder, to the circumstances and to the constitution of the patient." - Dr Halle, MD in "Memoires de la Societe Royale de Medecine de Paris", 1786.*

"After having cured the derangement of the bowels, debility and all diseases generally disappear *of their own accord, even in a short time, and this in cases where, previously, they had resisted every means of cure directed against them, and which appeared to offer more chances of success." - Abernethy in "On the Constitutional Origin and Treatment of local Diseases", 1814.*

"The continuance of life and health is not possible, unless there be an unceasing arrival of new particles, and a continual departure of the old ones. Incessantly active, the vital and general powers approach constantly a state of equilibrium; the degree, however, of vitality is proportionate to the degree of superiority of the former over the latter." - Dr Ducrotay de Blainville, MD in "Principes d'Anatomie Comparée", 1822.

"The symptoms of self-poisoning are mainly objective, and for this reason are overlooked by the patient and disregarded by the physician." *- Dr Albert Abrams, MD in "Man and His Poisons", 1906.*

"Prof. Dr Van Noorden of Frankfurt, in his monograph on "Diseases of Metabolism and Nutrition", says:

"Within recent years the idea has become firmly established in the minds of physicians that a variety of morbid phenomena are due to autointoxication, are, in other words, attributable to certain poisonous metabolic products.

This view, it is true, is not new, for it was familiar to the physicians of past generations, and was part of the teachings of the medical folk lore of long ago. It was not, however, until Bouchard and his pupils published their investigations on the subject of autointoxication that this theory attained the dignity of a scientific doctrine. At first we German physicians were by no means inclined to accept the theory of autointoxication that was being so enthusiastically proclaimed. Of late years, however, our attitude has become more friendly to the doctrine; this change of front is due to the fact that a number of toxic products of metabolism have actually been isolated, and their mode of origin in the organism and their pathologic effect determined to the satisfaction of the former critics of the doctrine. We do not, of course, know all that we should properly know about the poisonous metabolic products that we incriminate in so many morbid states; but in a large group of important symptom-complexes we are fortunately in possession of a number of facts that suffice to ground the doctrine of autointoxication on a solid chemical basis."

Dr. Kirk later says:

"I have made the foregoing quotation from an eminent exponent of German scientific conservatism to emphasize the fact that the doctrine of autointoxication as a factor in disease causation, and as a prodromal state of bacterial invasion, rests upon an accepted scientific foundation." - Dr Greenbaum, MD, DDS in "The Practice of Dentistry", 1912.

Constipation is often due to mechanical stasis at some point which such as the splenic hepatic or sigmoid flexures. In considering the bacteriology of the intestines, we must remember that fermentation of carbo-hydrates usually produces a slight intoxication over a long period of time while with all proteids produced an acute toxemia." - Dr William J. Lamson, MD, in "Journal of the Medical Society of New Jersey", Vol. 9, 1913.

Internal Cleanliness

"**The most prominent cause of Physical Disease is a gathering of waste material within the body. This is what is often called Autointoxication.**

The reason for it is that the wastes are not eliminated as rapidly as they are produced. The accumulation of matter which should be excreted always causes physical trouble.

Sometimes it will produce acute disease; at other times this material slowly gathers and gradually poisons the body until the individual finds himself suffering from chronic disease. If this process of poisoning, or intoxication is allowed to continue it debilitates the individual and shortens life." - Dr Rasmus Larssen Alsaker, MD in "Outwitting Old Age", 1926

"Interstitial hypertrophy may be brought about through the irritative effect of toxic matter, generated within the system by bacterial action, or absorbed from the gastrointestinal tract, upon the fine nerve filaments of the unriniferous tubule.

As these toxins pass through the tubular lumina, the nerve filaments are affected:

1. By being inhibited, thereby removing the vasoconstrictor impulses, conducing to dilatation of the arterioles and increased nutrition;
2. By being irritated, thereby conveying impulses over afferent fibres to cerebral and spinal centrers, which being reflected over efferent fibers, result in more or less general vascular systemic constriction, with dilatation of renal vessels and interstitial over growth.

These illustrations doubtless explain the usual case of chronic interstitial or gouty nephritis.

In general the symptomatic manifestations of the various Bright's disease are noticeable in their effect upon:

1. The nervous organism, owing to the excrementitious matter retained in the system;
2. The heart, by offering an impediment to the onward flow of blood, tending to hypertrophic changes;
3. The gastrointestinal tract owing to the necessity for it to take on a vicarious function to compensate for the renal insufficiency;
4. The blood vessels, owing to increased vascular pressure, and to the necessity for it to take on a vicarious function to compensate for the renal insufficiency;
5. The blood vessels, owing to increased vascular pressure, and to the toxicity of foreign matter within the circulating media, which tend to cause vascular thickening and sclerosis." - Dr. Guy E. Loudon, DO in "Bright's Disease", JAOA, 1904.

"Whenever any function of the human organism fails in its specific action, organic equilibrium is disturbed in a measure proportionate to such failure; and this disturbance is transient if compensation is established by increased action of other organs, permanent if they fail to perform this added duty or if there is actual destruction of tissue. This is particularly true of those organs of the body concerned in the elimination of the excreta, the retention of which causes poisoning." - Dr W. Louis Chapman, MD, in "Auto-intoxication as a Cause and Complication of Disease", 1903.

"The classification adopted by Dr Albert Albu, MD in "Ueber die Autointoxicationen des Intestinaltractus ", 1895 is as follows:

1. Autointoxication caused by loss of function of an organ, e.g., Myxedema, Pancreatic diabetes, Addison's disease, Acute Yellow Atrophy of the Liver;
2. Autointoxication due to general abnormalities of metabolism, e.g., Gout, Oxaluria, etc.;
3. Autointoxication from retention of physiologic products of metabolism in various organs of the body, e.g., toxic phenomena after extensive burns, carbonic acid poisoning in difficult respiration, Uremia, etc.;
4. Autointoxication caused by overproduction of physiologic and pathologic products of the organism, e.g., Acetonuria, Coma of diabetes, etc.

In a position between groups 3 and 4, and probably belonging to both, are the great majority of the autointoxications which proceed from the intestinal tract." - Dr G. E. Schweinitz, MD in "Autointoxication in Relation to the Eye", JAMA, 9 February 1907.

All individuals, in order to maintain body health, need to be aware of those things, that become as an hindrance to the physical body, those conditions that are of the physical nature, that may become subject to the purely material influences through the allowing of the creating of poisons through the system by:

1. Poor Assimilation
2. Poor Elimination.

Thus the body system becomes gradually poisoned.

Intestinal Auto-Intoxication

"Auto-intoxication through the intestinal canal consists of the retention of normal and abnormal material in the intestines.

The result of the stagnation of such material is the decomposition putrefaction and fermentation of the ingesta.

The products of carbohydrate fermentation give for: mic, butyric, lactic, acetic and succintc acids, gases etc.

While the products of albuminous decomposition give: NH3, CH4, H2 S, leucin, tyrosin, cystin, phenol, indol, skatol, aceton, etc.

In a paper on Diarrhoea and Bacteria published in The New York Medical Journal, 8 May 1897, I cited several authorities who have shown that vast numbers of microbes within the intestinal canal generate poisonous ptomaines and toxins which are rapidly absorbed.

With the superabundant production and the retention of all these substances in the intestinal tract, a series of symptoms presents itself, suggesting a diseased condition of the digestive tract, of the respiratory system, of the circulation, of the kidneys, and, above all, of the nervous system.

Since a condition of auto-intoxication clearly exists, inasmuch as the symptoms disappear when the poisons are removed, we may safely assume that the symptoms presented are due to auto-intoxication.

It is a well known fact that there is a certain relation between affections of the digestive tract and diseases of the nervous system.

The ancients went even so far as to charge certain forms of vertigo to disturbances of digestion.

The term hypochondria, originally the name of that part of the body situated between the xiphoid cartilage and the navel, implies that it was supposed that the abdominal cavity was the seat of the pathological condition.

Intestinal auto-intoxication can become manifest through the nervous system, through a derangement of metabolism, through the circulatory system and through the skin.

Vertigo, which appears also in other forms of poisoning, as through alcohol, nicotine and various alkaloids, is a constant symptom of intestinal auto-intoxication.

We also find headache, pressure in the head, neuralgia and cerebral vomiting.

Pyschic disturbances are often particularly marked.

Depressed spirits, feeling of disgust, aversion to work, disinclination to social intercourse and melancholia are observed in these patients.

All symptoms which are present in neurasthenia are present also in intestinal auto-intoxication.

While we were formerly inclined to look upon the disturbances of digestion in neurasthenia as secondary symptoms, experience teaches that the symptoms of the digestive tract precede neurasthenia.

In certain cases there is a disturbance in the organs of sense, darkening of the field of vision, hallucinations, ringing in the ears and deafness.

Bouchard has demonstrated the toxidity of the urine in neurasthenic cases, and it is absolutely certain that poisonous products get into the blood.

Indicanuria nearly always suggests auto-intoxication.

Constipation is not necessarily co-incident with auto intoxication, for it has been shown that the more fluid-like the contents of the intestine are, the more rapid is the absorption of poisonous material.

Accordingly the urine in diarrhetic condition has been found to be most poisonous. In cholera the absorption of toxins is continuous despite frequent energetic evacuations of the bowels.

It appears that patients in states of auto-intoxication feel better when constipated than when their intestines are filled with semi-solid materials.

Again, we have an auto-intoxication in an obstruction of the bowels, for the natural outflow of the waste material is arrested, excretion is imperfect and

absorption of the poisonous materials which are present takes place quite rapidly.

The eclampsia of children with digestive disturbances is more easily explained in terms of auto intoxication than on lines of the reflex-theory.

Boix of France has published a book on "Cirrhosis of the Liver Produced by Auto-Intoxication of Gastro-Intestinal Origin", 1897.

He proves that in addition to alcohol as a cause for hepatic cirrhosis, there is an auto intoxication of gastro-intestinal origin which frequently causes cirrhosis.

The author demonstrates that there is a peculiar form of hypertrophic cirrhosis which is caused by the passage through the liver of toxic substances produced in the alimentary canal, and he calls this a dyspeptic liver, so as to differentiate it from alcoholic liver, which designates an other form of cirrhosis.

To the class of cases in which we have a derangement of metabolism due to auto-intoxication we may add many cases of chlorosis.

In certain cases of chlorosis we resort to anti-fermentative therapy and this implies that we believe that there is some pathologic connection between it and auto-intoxication.

Bouchard, Rosenbach, Couturier and others have shown that intestinal auto-intoxication has considerable significance in chlorosis.

Such disturbances of the circulation as excitability of the heart, tachycardia, and various other forms of vasomotor disturbances are often due to intestinal auto-intoxication.

Auto-intoxication frequently becomes visible in certain kinds of skin affections, such as urticaria. It was formerly regarded as an idiosyncrasy, but we now know that it is an intestinal auto-intoxication.

Pick of Vienna has proven that attacks of urticaria can be prevented in susceptible patients by cleansing the intestinal tract.

Singer has verified this, and adds that there is always an increase of indican in the urine.

The symptoms of collapse produced by obstruction of the bowels, either acute or chronic, are no doubt due to auto-intoxication.

The kidneys being compelled to eliminate the poisons which have been absorbed through the intestinal tract are in this way injured.

Albuminuria found in an intestinal stenosis and the disappearance of the albuminuria when the obstruction is removed are probably due to auto-intoxication.

Posner, has gone even so far as to maintain that nephritis may be superinduced by bacteria (waste metabolism), which having been absorbed by the intestines, have found their way to the kidneys and there cause an inflammatory condition.

The bacillus coli communis especially is apt to behave in this way.

From all that I have cited, it seems to me clear that Auto-Intoxication through the intestinal tract is a frequent phenomenon, leaving it to future investigators to add to the information we have at present." - Dr Charles D. Aaron, MD, Instructor in Materia Medica, Detroit College of Medicine, 1897.

Cirrhosis Produced by Auto-Intoxication of Gastro-Intestinal Origin

"In this work Dr. Boix seeks to establish the fact that in addition to alcohol as a cause of hepatic cirrhosis, and independent of some other hitherto recognized causes, there is auto-intoxication present, and this auto-intoxication is of gastro-intestinal origin.

The author has demonstrated that there is a peculiar form of hypertrophic cirrhosis which is caused by the passage through the liver of toxic substances produced in a diseased alimentary canal, and he uses the term "dyspeptic liver" just as the term "alcoholic liver" is used to designate the effect of another form of cirrhosis." - in "JAMA", Vol. XXIX, September, 1897.

Irritation of the Sympathetic Nerves

"An irritation of the sympathetic nerves, persistently applied cannot but disturb the functional activity of the spleen, which, as we all know, is one of the organs chiefly interested in the haemoglinic process. Kruger recognizes this fact and urges that chlorosis and even pernicious anaemia may be caused in this manner.

This conclusion is directly in line with my own observation.

But without reference to the part that may or may not be played respectively by the spleen, lymphatics, glands, and bone-marrow in blood production, the fact remains that the integrity of the blood depends in the first instance upon the condition of primary nutrition, i.e., food, digestion, and assimilation; and, in the next in stance, upon the proper deposition of the products of metabolism; i.e., elimination. If the former is interfered with the supply will not equal the waste; if the latter is intercepted the blood becomes laden with toxines, the influence of which upon its constitutional elements is strikingly destructive.

There is not a recognized form of anaemia, not even in progressive pernicious anaemia, nor in chlorosis, pseudoleucaemia or Hodgkin's disease, but that present instances in which some disorders of the gastro-intestinal tract has followed initial mischief in the ovaries, tubes, or womb.

In other words there are none of these diseases but that, in many instances, trace their development to some interference with primary nutrition.

There exists outside of the virulent infections, no more pronounced or no more persistent interference with primary nutrition than that arising from diminished peristalsis due to perturbation of the controlling sympathetic.

Such a condition is at once favour able to absorption, but inimical to elimination. As a consequence, there is a hyperabsorption from the gastro-intestinal tract. The various toxines elaborated in the prima via are taken into the circulation where they exercise a globulicidal influence.

Add to those thus taken up the products of metabolism which are retained in the circulation for want of open-door Emunctories, and we have a double tide of destructive agencies, cooperating to produce anaemias, which, while truly

symptomatic, frequently become such overshadowing features as to be classed as idiopathic." - Dr Charles A. L. Reed, MD, in "Preliminary Observations on the Relation of some Intrapelvic conditions to Blood States in women", The American Gynaecological and Obstetrical Journal, Vol.15, 1899.

Auto-Intoxication as a Factor in Mental Disorders

"Dr Regis and Dr C. Lavaure in the French Congress of Mental Medicine. Arrived at the following conclusions:

1. The toxicity of the urine is notably diminished in maniacal and augmented in melancholic conditions. The urine of maniacs and that of melancholiacs have different actions on the animals in which they are injected. The former causing chiefly excitation and convulsibility, and the latter depression, inquietude, and stupor. This would rather prove that auto-intoxication is the cause and not the effect of the mental state.

2. These results, show that the phenomena of Auto-Intoxication play an important part in mental diseases, and this is further indicated by recent nosological investigations on the insanities of the acute infectious diseases, and those of the visceral and diathetic disorders.

As far as the psychoses of the infectious disorders are concerned, they are the result either of the direct action of the microbes or of their mediate and indirect action through the toxines they secrete.

From a clinical point of view they may present themselves at 2 different periods.

1. During the febrile stage the disorder ordinarily takes the form of an acute delirium.

2. During the post-febrile stage, or during convalescence, we find the so-called asthenic psychosis present; this is a more or less variable mental condition, consisting usually of a mental confusion, stupidity, clouding of the faculties, a pseudo-dementia.

An intermediate form between these 2 may possibly be admitted to exist.

The visceral psychoses are in reality genuine insanities from auto-intoxication.

It may be said that where the intoxication is acute it shows itself as an acute toxic delirium, resembling alcoholic delirium, as in uremic insanity; when the intoxication is chronic it generally induces a melancholic condition.

Some cases resemble more or less paretic dementia. General or local anti-infectious antiseptic treatment is found to give excellent results.

There are enough facts to show that in the infectious or auto-toxic insanities one must resort to the treatment of the infection or the auto-intoxication to relieve the mental disorder. Progres Medical" - in "Quarterly Journal of Inebriety", 1895.

A Consideration of Auto-Intoxication and Auto-Infection as Cause of Various Mental Disorders

"Auto-intoxication is a poisoning of the system by the products of disturbed metabolism, and these products may be abnormal in character, or normal in character and abnormal in quantity.

Auto-infection is due to the presence within the body of some form of bacterial life, the symptoms representing part of a general toxemia, and it is probable that any of the infectious organisms may produce such a toxemia.

We all know that normally the food principles that are necessary for the nutrition of the brain and other parts of the body are absorbed from the stomach and intestines, then carried by the circulation to the various parts of the body, leaving the debris, containing very little nutrition, but much poisonous and effete matter, to be passed on and evacuated.

With a disturbed metabolism, poisonous instead of nutritious elements are absorbed, and the nutritious are evacuated.

At the same time in certain cases, other organs are disturbed in their action.

The bowels become constipated for want of the bile, pancreatic and other juices, and in young women the menstrual molimen (laborious effort made for the performance of any normal body function) often ceases, and such debris as is usually thrown off at that time is absorbed into the system.

Examination of the urine in many cases shows a disturbed metabolism.

In the infections, as is now held regarding rheumatism, it is probable that any of the so-called infectious organisms may lead to a toxemia in which the brain as well as the glands, joints, eyes and other organs may be involved.

Dr. Keene in quoting Bouchard says:

> *"Bouchard has determined a unit of poison which he calls a toxic unit and defines as the amount of poison required to kill one kilogram of living matter. The urotoxic is the quantity of urinary alkaloids capable of killing a rabbit weighing a kilogram. The urotoxic coefficient in man is .465. In other words, for each kilogram of body weight enough poison is excreted in 24 hours to kill 465 gm. of living matter; or, in 2 days and 4 hours a man excretes enough poison to kill himself. These facts are of the utmost importance to the psychiatrist. Heredity may in time be as much divorced from insanity by the toxins as it has been separated from phthisis by the bacillus of Koch."*

Some authorities believe that the auto-intoxication results not only from the products of disturbed metabolism, but also from the absorption of toxins produced by excessive growth of the micro-organisms which normally inhabit the gastro-intestinal tract.

General paralysis of the insane is considered by several authorities as being caused by auto-intoxication of this kind.

W. Ford Robertson says:

"I think we may logically infer that the toxemia of general paralysis is of gastro-intestinal and bacterial origin. The clinical and anatomical evidences of irritation of the gastro-intestinal mucous membrane, the irritative changes in the portal spaces and the fact that so far it has been impossible to localize the origin of the toxins in any other part of the body, all point to the gastro-intestinal tract as the place in which the toxins are formed. Micro-organisms normally inhabit the alimentary tract, but it is the excessive growth of these which causes the gastro-intestinal auto-intoxication. This excessive growth is prevented normally, according to some writers, by the hydrochloric acid of the gastric juice and by the bile. Bouchard says it appears to be certain that the liver normally arrests or transforms toxic substances which originate in the intestinal canal. Others say that the micro-organisms are held in check here, as elsewhere, by leucocytes, alexins, and anti-toxins. Besides these, there is the surface epithelium and the mucous secretion which act mechanically in preventing this excessive growth. Then there is supposed to be a weakening of the power of natural resistance to bacteria. These increase in number. The toxins are formed in too great quantities to be excreted freely or destroyed and are absorbed and affect the nutrition of certain of the tissues. The vessels of the central nervous system are especially sensitive to the toxins and undergo proliferative and degenerative changes. In consequence of these structural changes, the nutrition of the adjacent nervous elements is interfered with."

W. Ford Robertson says in his summary that:

1. General paralysis is dependent upon the occurrence of a chronic toxemia of gastro-intestinal origin.
2. That toxins are mainly bacterial and are formed in consequence of a partial breakdown of those forces by which the harmful development of micro-organisms that cause the ordinary flora of the alimentary tract is normally prevented.
3. The toxins are absorbed and tend specially to produce proliferative and degenerative changes in the vessels of the central nervous system.
4. These vascular changes tend to set in earliest in those parts of the brain that are relatively best supplied with blood, because their walls are brought in contact with the largest quantity of toxins.

Peterson in his 3rd edition says:

> *"Accumulations of deleterious agents in the blood in such quantity as to affect the nervous system (e.g., carbonic acid and the poison of diabetes and of uremia) have been long known to medical science, but the more mysterious poison produced by disease in various parts of the body, by fermenting and putrefying substances in the alimentary tract, and by some of the acute infectious fevers, have only of late taken an important place in the etiology of the psychoses."*

Dr. G. M. Dewing, Superintendent at Long Island State Hospital, King's Park, Long Island, in his report for the year ending 1902, states that in acute cases:

> *"Auto-intoxication, especially from the intestinal canal, is almost always present, and that the medical symptoms are found to be greatly exaggerated owing to a failure on the part of the organism to remove waste."*

He examines the blood and secretions. Nutrition is maintained by giving all the nourishment the organism can assimilate and make use of.

He also gives water in considerable amount between meals; this is insisted on and is found to be of great advantage.

Dr. Geo. F. Keene, superintendent of the State Hospital for Insane at Howard, R. I., says that he believes that manic depressive insanity is chiefly caused by auto-intoxication.

In 1894 he wrote an article to the Boston Medical and Surgical Journal:

"Do we not know that a failure to excrete waste products has a marked toxic effect upon the brain and nervous systems, producing convulsions, coma and insanity?"

"Why cannot leucomaines act as destructively as alcohol?"

"Had the scientific physician been satisfied with the germ theory the history of ptomaines would have been lost to us."

"Each vitalized cell in the animal body, as a result of its own vitality, disintegrates and regenerates itself. This disintegration is death; this regeneration is life; and hence, when we begin to live, we begin to die.

Health is dependent upon the incessant formation, transformation and elimination of organic materials.

We constantly bear about within us the effete debris of our living selves.

We are constantly burning; the fire must be fed, the gas carried off, the heat utilized, the ashes withdrawn.

The liver and the kidneys are our stokers, the lungs and skin our chimney, the intestines our ash-pit, the blood our forced draft.

Comparatively recent research has discovered that there are present in the body, both as the result of normal physiological action in health and of pathological (or bacteriological action, if you will) in disease, certain chemical compounds called alkaloids, which have been classified (according as they originate from germ action or dead albumins, or all activity in vital tissues) as Ptomaines and Leucomaines. Both are crystallizable and capable of forming salts, and both are more or less active poisons.

How recently the Erlich test of typhoid has been presented to us, showing the formation in the intestines and excretism in the urine of a chemical substance recognized by certain reactions.

Certain non-crystallizable nitrogenous substances which are elaborated in the animal economy and are more toxic than either ptomaines or leucomaines, have been recently isolated, and, for want of better a name, have been called extractives, toxins, chemical X-Y-Z's." - Dr L. Vernon Briggs, MD, Physician to the Mental Department Boston Dispensary, in "The Boston Medical and Surgical Journal", 5 January 1905.

Causes of Intestinal Toxaemia

"The causes of Intestinal Toxaemia are:

1. Everything which Increases the Production of poisons.
2. Anything which Diminishes the Destruction of poisons.

In the former category we include all dyspepsias, whether due to taking too much food, too frequent meals, too rich meals, too little mastication, or to an insufficiency of the gastric and other digestive juices; stasis from whatever cause, pyloric spasm or stenosis, intestinal spasm or adhesions, muco-membranous or other colitis; chronic nasal catarrh, adenoids, enlarged tonsils, all charging the secretions with living and dead microbes and their toxins or other agencies.

In the latter category are included:

1. All infectious disorders such as influenza and measles. When the individual is attacked by these, agencies which maintain the immunity of the body, phagocytosis, bacteriolysis, precipitins, agglutinins, and so forth are for a few days at least in abeyance, so that the germs in the nose, mouth, and other cavities grow without let or hindrance, producing various lesions or so-called infections.

2. All conditions which reduce the toxicolytic power of the bowel, such as enteritis and deficiency of digestive juices, or of the liver, as, for instance, plumbism, alcoholism, tubercle, typhoid, influenza, pneumonia, rheumatism in

the mother causing congenital insufficiency of one kind or another in the child." - Dr Alexander Bryce, MD in "Intestinal Toxaemia or, Auto-Intoxication in the Causation of Disease", 1920.

Chronic Intestinal Toxaemia

1. First Line of Defence is the: Mucous Membrane of the Colon.
2. Second Line of Defence is the: Liver.
3. Third Line of Defence are: Tissues and Organs.

"With general breakdown of the second line of defence, the syndrome, chronic intestinal toxaemia, commonly develops.

The wide range of disorders in this syndrome and the variability in the manner of their expression have already been mentioned.

The factors responsible for these many manifestations are individual susceptibilities of tissues and organs, and the variations in the third line of defence which embraces immunity, detoxication, and elimination.

Furthermore, since chronic focal infection may be either the cause or result of chronic intestinal toxaemia, it will be appreciated how impossible it is to consider either apart from the other.

The liver, a common factor in both, is the unifying agent.

The anatomy and physiology of the intestine and adnexa compel us in a very definite way to recognize the element of design throughout.

There is no question but that the intestinal canal, the portal circulation, and the liver were constructed and adapted in view of intestinal bacteria and toxins.

For the same reason the liver was given its large margin of safety and its great power of regeneration.

With repeated and habitual failure in the 3 lines of defence, we at first observe the so-called bilious attacks with headache and vomiting. Yet as time goes on, a considerable degree of tolerance is established and these symptoms are less evident.

Nevertheless, the effects of toxaemia may be manifested in other ways, such as by the irritation of a single nerve or ganglion, as in facial neuralgia, sciatica or brachial neuritis.

Or there may be damage to the endocrine system resulting in obesity, diabetes, psychic disturbances or high blood pressure; or irritation of the splanchnic area, causing low blood pressure; or irritations leading to the production of asthma, mucous colitis, dermatoses or anemia.

And finally, the true degenerative lesions begin to appear, the quarternary manifestations of chronic non-specific infection, as truly as locomotor ataxia, dementia paralytica and aneurism are of syphilis.

Such diseases are:

1. Arteriosclerosis.
2. Cirrhosis of the liver.
3. Chronic Nephritis.
4. Arthritis.
5. Myocarditis, etc.

Toxins and bacteria entering the portal circulation from the colon add tremendously to the burden already on the liver, enhancing thereby the pollution not only of the general circulation but of the biliary system as well.

Thus, a second circle is completed.

The lymphatic drainage from the ileum and colon to the receptaculum chyli, thence to the left subclavian vein, becomes a third; and as the liver becomes damaged and congested with resultant stasis and hypertension of the portal circulation, we have a fourth, by way of the hemorrhoidal anastomosis to the internal iliac veins and inferior vena cava.

It must be evident now that no matter how or where a chronic low-grade infection originates, the whole body ultimately becomes involved.

Intestinal Toxins

Toxins of Intestinal origin: Such toxins must run the gauntlet of 3 capillary circulations:

1. The Liver.
2. The Lungs.
3. The Periphery.

Before reaching a vein from which blood may be withdrawn for examination.

By this time they have become altered, mingled with toxins from other foci of infection, and largely eliminated as gases and non-toxic conjugated end-products." - Dr James Wesley Wiltsie, MD in "Chronic Intestinal Toxemia and its Treatment. With special reference to Colonic Therapy", 1938.

> *"All chemists agree that the knowledge of this subject is crude, that little is known about the chemistry of living protoplasm, that highly specialized poisons, hundreds of different kinds, may pass in and out of the blood stream continuously 24 hours out of the 24 in infinitely small amounts that cannot be found by known qualitative tests; or that scores of such poisons by all the known tests cannot be detected at all and that a man may be poisoned by constipation and yet biologic chemistry may not be able to prove it."- F. H.Redewill in "Colon as a Site of Focal Infection", 1930.*

Autointoxication And Its Treatment

Organic Diseases, are in their greater part, no more, nor less, than the different stages of Autointoxication.

Thus, the manifestation of the different stages of Autointoxication, are called: Symptoms of Disease.

Thus, that which hinders the body physically the most; is above all, the poor functioning of the Emunctories, caused by the burden placed upon them by:

1. Improper Diet, and
2. Wrong Combination of Foods.

This is the main reason why Hydropathy and Osteopathy combined, come nearer to being the basis of all needed treatments for the majority of physical disability conditions.

Faecal Anaemia

"Sir Andrew Clark has done good in calling attention to the importance of constipation as a factor in the production of anaemia or chlorosis in young women.

The mechanism of their causation by absorption of the products of the decomposition of retained faeces, clinical experience indicates plainly enough that a very close relationship exists between the two.

Not only with regard to faecal accumulation, but in respect of retained excretions anywhere, the same observation holds good. This fact accounts for the good effects which attend purgation in so many disordered conditions more or less dependent on the non-elimination of excrementitious products.

When the effects of decomposition compounds are superadded to those of non-elimination, it is not surprising if a morbid condition of things be engendered.

It was incidentally remarked that faecal accumulation may take place without constipation.

In other words, there may be a daily but imperfect action of the bowels.

Although this is a trite observation, it is but too frequently lost sight of in the treatment of these conditions. The role of ferruginous preparations in restoring the blood to its normal condition is an important one, but it is quite subsidiary to the necessity for effecting a thorough clearance of the overloaded colon.

For this purpose, our forefathers resorted to a combination of iron and aloes, which fulfils every indication and has the merit of being less nauseous to take, if given in the form of pills, than the horrible blend of Epsom salts and perchloride of iron which figures in every hospital pharmacopoeia." - in "Medical Press", 23 November 1887.

Symptoms of Colonic Intoxication

"Headaches are very common. Dizziness is occasionally noticed, especially if the patient raises his head suddenly. Muscae volitantes frequently annoy; also evanescent scotoma, etc.; in fact, migraine is evident.

The "blues" are prominent; the temper is bad and the patient is exceedingly sorry for himself.

Any trifle upsets the mental equilibrium and nervousness is great.

That rather indefinite collection of symptoms which has been dubbed neurasthenia forms a marked feature of the intoxication.

There is loss of weight in advanced cases. Fever is usually notable by its absence. The skin is dirty, even yellowish, hut not jaundiced; this is specially marked under the eyes and about the body folds.

The hands and feet are chilly, and sour sweats are common, though sometimes the skin is dry and harsh. Usually the skin feels greasy.

The nails are ill grown, irregular, brittle, flecked and ridged.

Dr. George H. Hoxie, has studied the blood for the in a number of cases with the following result:

The characteristic feature of the blood-picture of colonic auto-intoxication lies in the staining reactions of the white cells. The haemoglobin, total red count and total while count are within normal limits and thereby differentiate the condition from inflammations of the acute type.

But the relative numbers of the various cell types differ from both the normal and the condition found in inflammations in that the total polymorphonuclear percentage is decreased and the large lymphocyte percentage increased.

The typical deeply staining small lymphocytes are also decreased.

The cell that may be called characteristic of the blood picture is the polymorphonuclear that takes both the red and the blue stains in its protoplasm — the so-called ambophilic cell.

The nucleus of this cell may be lilac or deep blue, but the protoplasm is made up uniformly of large heavily stained purple granules lying in a mauve cytoplasm.

The cell is therefore prominent in the field because it seems darker to the eye than the other polymorphonuclears.

Such cells may be occasionally found in other conditions but only in relatively small numbers.

Therefore, when one finds these cells exceeding the total number of polymorphonuclears by 20%, one should look for the other signs and symptoms of colonic auto-intoxication.

An average picture would be: Hemoglobin, 90 to 100; red blood-cells, 5,000,000; white blood-cells, 9,000.

Differential count: Polymorphonuclears, 60%; mononuclears, 35%; mast cells, 0.5%; and eosinophils, 1%. Of the polymorphonuclears, 6%, immature; 15%, neutrophils; 60%, ambophils; 10%, basophils; and 5%, oxyphils.

Of the mononuclears, 80%, large forms; 10%, small forms; and 10%, immature.

The indican and phenolsulphates in the urine are increased in quantity.

Symptoms of Some of the Conditions Causing the Intoxication

A. Cecum Mobile, Ptosis of the Cecum, Atony and Dilatation of the Cecum, lleac Kinks and Pericolitis Dextra. — These conditions may he considered together, as their symptoms are very similar and possibly, to a large extent, the various names given may refer to one and the same thing.

Besides the general symptoms of intoxication, we find painful sensation in the lower abdomen, commonly on the right side, less commonly in the whole hypogastrium and occasionally diffuse (60%, right side, 24%, whole hypogastrium 16%, diffuse [Klose]). The symptoms are not, constant.

Early in the history of a case there are only indistinct; pain, tenderness and a feeling of fullness; Inter these symptoms become more severe, take the form of crises which appear at decreasing ¡intervals and with increasing severity.

Usually before an attack there is increase in the constipation, then intermittent colics appear without fever (if there is fever either diagnosis is wrong or secondary complications are present).

On palpation, one finds an air-cushion-like fullness over the caecum which may extend down into the pelvis. If the caecum is heavily loaded with faeces a palpable tumour may be felt instead of the cushion. Rectus rigidity, is absent in spite of the presence of tenderness and often of superficial hyperesthesia (excessive physical sensitivity of the skin). If rigidity is present then inflammatory complications must he assumed. Splashing noises and rumbling are often noted in the caecum.

Vomiting is common.

In cases in which an ileac kink is present the symptoms are sometimes severe, especially after a purgative has been taken; suddenly the patient feels something "give way", and soon the crisis passes.

Between the attacks the less distinct signs of constipation, splashing and moderate tenderness persist.

Stasis at the Sigmoid

Rectal examination can give valuable information.

The x-rays show that the faeces pass through the intestinal canal at their normal rate until they arrive at the lower colon, in which they stagnate.

1. The mucous membrane has a protective power against absorption, if the integrity of the mucosa is impaired by erosion or ulceration absorption of toxins may be facilitated. This impairment of the mucosa may be a late or an early phenomenon and is dependent on the presence of inflammatory changes which in turn may be due to mechanical causes (hardened faeces, circulatory disturbances from altered positions of viscera, etc.).

2. Variations in the protective potency of such organs as the liver, kidneys, etc., must cause proportionate variations in the symptoms.

3. The amount and character of the toxins present must vary according to the diet, and to the amount and character of putrefactive changes taking place in the intestine.

The symptomatology of colonic intoxication may be greatly confused by the presence of other lesions which may be either the cause or sequel of the colonic trouble; such are Appendicitis, Gastric erosions or ulcers, Cholecystitis, Gall-stones, etc." - Dr J. F. Binnie, MD in "JAMA", 29 June 1912.

Melanuria in Mental Disease

"In an examination of microscopic sections of the large intestine, removed by Dr J. W. Draper from about 170 patients suffering from various types of functional neurosis at the New Jersey State Hospital under the direction of Dr Henry Cotton, marked pigmentation has been noted as a striking feature in many of the specimens.

The pigment in these cases contain's no iron, and belongs in the group of melanins. It is sometimes present throughout the entire large bowel, but is usually most marked in the caecum, diminishing toward the sigmoid.

On section, the pigment is found as a rule to be confined to the mucosal layer, where it is seen as large polyhedral cells with a yellowish brown stippling.

It does not stain by the Prussian Blue method.

Pigmentation of this type is generally regarded as a sign of intestinal deterioration, and is not infrequently seen in the bowels of those who have suffered from long continued intestinal stasis and intoxication.

Sometimes the epithelial cells themselves are the site of this pigmenlted deterioration. But more often the yellowish brown polyhedral cells lie in columns in the lympho-reticular tissue, frequently in close proximity to the minute blood vessels.

In one instance a pigment cell has been observed lying within the lumen of a small vessel which perforated the muscularis mucosae and terminated in the reticular substance of the mucosal layer.

These observations suggested the possibility that the pigment in the type of case under consideration might reach the circulation, and should therefore be sought in the urine.

Urinary examinations for the detection of melanuria have been made in 300 patients suffering from various types of mental disease, but otherwise free from disease which might be expected to produce melanuria.

The technique used was that employed by Haden and Orr, which was based on the recommendations of Helman (Johns Hopkins Hospital Bulletin, 1924, xxxv, 58).

Three reactions in sequence must be demonstrated to prove the presence of melanin:

1. The addition of ferric chloride gives a brown or black precipitate, which;
2. Dissolves on the addition of sodium carbonate and from which;
3. A brown or black amorphous powder is precipitated on the addition of a mineral acid.

In the 300 cases examined, melanin in quantity was 5 times found in the urine, an observation not previously made in this type of disease.

Since a large percentage of patients suffering from mental disease has been proven by pathological studies to present marks of advanced cellular deterioration in their large bowels, since this deterioration is often characterized by a striking degree of melanotic pigmentation, and since the possibility that this pigment enters the circulation has been established by microscopic investigation one explanation of the presence of melanuria in the patients examined which must be seriously considered is that the pigment reached the urine from the bowel.

If this explanation proves to be correct melanuria may be found to be an important clinical sign of intestinal deterioration.

It is important in this connection to note that Haden and Orr have observed melanuria in intestinal obstruction.

The work here reported is part of an intensive study of the relation of intestinal infection to systemic disease, now in course in the Department of Hygiene at Cornell University Medical School in conjunction with Professor Torrey and Dr Kahn; and the pathological material was obtained from the Pathological Laboratory of the New Jersey State Hospital." - Dr John W. Churchman, MD, Department of Hygiene, Cornell University Medical College, New York City, in "Experimental Biology and Medicine", Vol.22, Issue 3, 1924.

The Role of Auto-Intoxication in the Etiology of Disease of the Higher and Lower Nervous System

"A 100 years ago, leading French alienists taught that mental disorders had their origin in abdominal disorders; cf. melancholia. This teaching has been largely disregarded, and never submitted to investigation from the standpoint of general medicine.

Dr Chalmers Watson, MD views as published since 1900, dealing with the factor of auto-sepsis, taking origin in one or other of the mucous surfaces of the body:

e.g., faulty state of teeth and gums, abnormal conditions of the digestive tract as revealed;

by: a) physical examination, b) examination of stools, c) X-rays, etc., and abnormalities in the urine, more especially the presence of bacteria, cells, etc. etc.

The influence of auto-sepsis in aggravating and complicating other disorders, e.g., specific infection, tuberculosis, etc.

Reference to recent work on disseminated sclerosis and to the conclusions tentatively drawn by experts from it, as to **the intestinal tract being the primary source of the toxic agent responsible for the changes in the nervous system.**

This work has been all but ignored by neurologists." - in "Edinburgh Medical Journal", 1925.

The Alimentary Canal and the Colon

"**The alimentary canal and the colon in particular constitutes a very efficient bacterial incubator and culture media combined.**

Normally, the acid fermentative processes should be in control, but in delayed movement or alterations in the mucous lining of the intestine, putrefactive organisms may predominate over the normal fermentative bacteria so that the bowel content become alkaline in reaction.

Under these conditions the digestive products of proteins, fats and carbohydrates contribute material for the generation of toxins.

These toxins are formed largely by the action of bacteria upon protein matter, which has been arrested in its passage through the large bowel.

In such cases, where colonic stasis has existed for some time, the putrefactive changes may saturate the tissue fluids to such an extent that the detoxicating powers of the liver and kidneys are lost or impaired with the result that the tissue fluids become more and more saturated, sometimes to such a degree that functional changes and even degenerative structural changes may result.

Dr. Harvey Kellogg, states that most civilized people are suffering from intestinal stasis and from the consequences of intestinal toxemia.

The great increase of heart and blood disease, diabetes, Bright's disease, and other disorders of degeneration which have occurred within the past 30 years is becoming more and more evident with each year's issue of the United States mortality statistics, and is, without doubt, in a large part due to the wearing out of the defensive mechanism of the body on account of the enormous amount of over-work required of it in dealing with the flood of toxic products which find their way from the colon into the blood stream.

He further states that practically every person needs the benefits to be derived from a change of bacterial flora and the avoidance of an excess of animal proteins.

His experience in dealing with a considerable number of tired business and professional men has convinced him that most of these men are not tired because they are over-worked, but rather that they think they are over-worked, because the work which they once enjoyed and were able to do so easily, has become irksome and fatiguing. **The fact is that they are suffering from toxic fatigue rather than normal fatigue which results from labour and is quickly cured by rest.**

Rest does not cure toxic fatigue.

The individual upon rising in the morning feels more tired than when he went to bed, because during the night the diminished activity of the heart, liver and kidneys has resulted in an accumulation of toxins in the blood stream, these toxins originating from putrefactive changes due to intestinal stasis.

In this connection, we may ask the question of physicians, or even nurses and attendants who have had years of intimate experience among the insane, whether or not they have seen attacks of acute mental disturbance aborted or relieved by the use of a prompt and efficient cathartic?" - Dr N.W. Kaiser, MD, in "The Ohio State Medical Journal", June 1930.

"The relation of diseased conditions of the digestive tract to disturbed mental states is only beginning to be appreciated, but already the cures of those who have been regarded as hopelessly insane simply by the abolition of pathological intestinal conditions, have made a profound impression upon the medical profession.

That faecal stasis may be the basic cause of many obscure psychoses, seems altogether probable.

It is not at all unusual to find cases of functional intestinal derangement where the mental depression is so severe as to be entirely beyond the patient's voluntary control, constituting an acute mental disturbance which is comparable in the mental sphere to a severe physical pain in the sphere of sensation.

Nervous impulses arising in the abdominal cavity and passing to the brain along the vagus and sympathetic nerve paths, have the power of directly disturbing the mental condition on which the sense of well-being depends and of giving rise to an acute mental distress which represents the physical pain which the subject would have experienced if the afferent impulse causing the stimulation had been transferred from the vagus or the sympathetic to the sensory nerves.

The fact that many mental disturbances are really due to functional derangement in the alimentary canal may be demonstrated clinically by the fact that these conditions yield to treatment that lessens the amount of bacterial activity in the bowel.

Individuals suffering from physical disability such as various forms of nervous depression and excitation and general endocrine imbalance often manifest a mental disturbance as well, such a syndrome has been postulated under the popular diagnosis vagatonia." - O. Boto Schellberg, RN in "Colonic Therapy in the Treatment of Disease, 1923.

Auto-Intoxication
As a Cause and Complication of Disease

"**Although all the vital processes which take place ill the body are in a great measure co-operative and interdependent, that of metabolism, with its indispensable function of elimination is conspicuous in its importance.**

The property of casting off unabsorbable materials and the chemical substances resulting from digestive processes is one which all living things possess.

Wherever there are living things the process of appropriating food from the environment, assimilating a part of it and casting off the residue constantly goes on. This residue contains more than indigestible refuse, there is also metamorphosed food material.

If fish are confined in a limited space with no egress for their waste products they soon die, even if their food is yet unconsumed. If animals or human beings are likewise confined, and no provision is made, for the admission of fresh air, they too die and with symptoms of narcotic poisoning.

Air once breathed is poisonous and the organism is killed by that which is cast off from its own lungs.

If bacteria are cultivated in nutrient media their multiplication continues until a time when their growth ceases, even if there remains a surplus of nutriment.

The media are found to contain a substance which is unfavourable to the growth of germs which is clearly the result of the metamorphosis of the nutrient media by the bacteria. They too cast off a substance which is harmful to themselves.

If the kidneys, through destructive processes in their substance or obstruction of their efferent ducts are unable to perform their eliminative functions, the animal soon dies, and with clinical phenomena which are fairly constant in different animals.

If obstruction of the bowel lumen occurs and an organism is unable to eliminate faecal residues, poisonous symptoms soon ensue and unless the condition be relieved they terminate in death.

In the tissues, if waste materials are retained too long, cellular death and lesions result, for if a cell is not separated from the products of its metabolism its life cannot continue.

For example; if the ducts of the pancreas become occluded and its specific secretion finds no outlet, pancreatitis and necrosis is likely to occur.

These facts are illustrative of a biological truth, that the end-products of metabolism are harmful to the organism from which they proceed, and to the resulting phenomena the appropriate name of auto-intoxication or self-poisoning has been given.

It is:

"The poisoning of an organism by matter produced within itself".

It is also:

"That form of self-poisoning in which neither wound nor gross pathological lesions exist, but poisons elaborated within the system are not excreted with proper activity, and the system at large is injured."

One might coin a definition:

Autointoxication is the poisoning of an organism by the retention of its metabolism end-products which normally are excreted.

Intestinal Fermentation, and Putrefaction are not normal, Constipation is not Physiological, and the retention of bile from duct stenosis is distinctly Pathological, so it is evident that other than normal excretions are concerned.

For it is impossible to conceive any perversion of function without variation in the specific product of such function, and the greater the departure from the normal, the more abnormal do the excreta become, and, as we shall see, the more poisonous.

So we must add to our definition that these materials are of 2 kinds:

1. Those that are regularly formed in the system.

2. Those formed in abnormal states where there is perverted or disordered function.

In diphtheria, for example, we have a poison elaborated within the body, but in no way related to it, as truly extrinsic as would be any poison administered by another individual.

In death from this disease the toxin kills, as would a drug, through its effect upon vital nerves, the anatomical structures of which are visibly changed, and not through a true self-poisoning.

The principals of auto-intoxication may apply in the case, affecting the course of the disease, and failure of the Emunctories may be an important factor in dissolution, yet it is not within the scope of the subject according to our accepted definition.

Whenever any function of the human organism fails in its specific action, organic equilibrium is disturbed in a measure proportionate to such failure; and this disturbance is transient if compensation is established by increased action of other organs, permanent if they fail to perform this added duty or if there is actual destruction of tissue.

This is particularly true of those organs of the body concerned in the elimination of the excreta, the retention of which causes poisoning.

Intoxications manifest themselves in a great variety of ways, according to the

toxic power of the substance itself, its degree of concentration, the part of the body with which it is brought in contact, and the susceptibility of the individual.

A disease may both cause auto-intoxication and be caused by it. We know that nephritis may be caused by endogenous as well as exogenous poisons circulating in the blood stream, and with this nephritis conies decreased functional powder and failure of elimination proportional to such loss. This necessarily produces intoxication whenever accumulation becomes great enough to produce toxemia.

Gastric dilitation is increased by the fermentation which its original dependency occasions, and the effect of auto-toxins upon the mind predisposes to errors of judgment and dietary indiscretions which promote the continuance of the underlying cause. We have reason to believe that cirrhosis of the liver is caused by intrinsic systemic poisons and from the peculiarly important place this organ occupies in the animal economy any failure in its activity predisposes to the elaboration of intestinal auto-toxins." - Dr W. Louis Chapman, MD in "Auto-Intoxication As a Cause and Complication of Disease", 1903.

Fermentation and Putrefaction

"Gastric fermentation is a disorder accompanied by very disagreeable symptoms and outward manifestations, that are evident to the most casual observer. Intestinal putrefaction is a disorder that is often entirely without local symptoms and which works its scorching damage upon the heart, blood vessels, kidneys and nerves without any evidence of its presence except that found in the laboratory.

Gastric fermentation is usually a simple example inside the body of the tendency of nature, in the presence of certain ferments, to the production of alcohol from carbohydrates, with a resulting evolution of carbonic acid gas.

Putrefaction is an example of the tendency of the molecules of protein matter to fall apart with the production of poisonous substances.

These poisonous substances are numerous, as the composition of the protein molecule is various, but the 3 prominent ones:

1. Indol.
2. Skatol.
3. Phenol.

Indol is easily detected in the urine and becomes sort of an index for the presence of the products of intestinal putrefaction in the blood.

Indicanuria is of no importance as a condition in itself.

Very few people are all the time free from a trace of this excretion in the urine. When well marked and persistent, its importance in connection with the establishment of chronic heart, blood vessel and kidney conditions cannot be exaggerated.

The major portion of cases of cardiovascular disease, as they present themselves to the specialist, have had their origin through the long-continued and insidious action of the products of intestinal putrefaction upon the circulatory organs, and in the major portion of these cases the process has gone on without recognition or treatment on account of the absence of symptoms directed to the real seat of the trouble.

If things could be reversed, and intestinal putrefaction could assume the prominent and disagreeable symptoms of gastric fermentation, many would be warned in time, and premature arteriosclerosis would be less common.

The main object of this communication, which is to emphasize the distinction between:

1. Gastric Fermentation, and
2. Intestinal Putrefaction.

And to bring to mind the fact that the latter condition is without prominent symptoms, though the results are disastrous." - Dr Louis Faugeres Bishop, MD, Clinical Professor of Heart and Circulatory Diseases, Fordham University School of Medicine, New York in "Journal of the Medical Society of New Jersey", March 1911.

The Indican Reaction as Evidence of Enterogenic Intoxication

"Indican is present in excess so frequently, not only as evidence of a primary pathological process, but of a complicating condition, that its very frequency leads to misinterpretation.

Further reason for this inquiry is found in the fact that the indican reaction is really the only test available to the general practitioner as an index of enterogenic intoxication.

(The terminology is unfortunately ambiguous. Intoxications arising from saccharo-butyric fermentations in the intestines are not considered, but only those arising from proteid putrefaction).

Partition estimations of the sulphuric-ether excretion in 24 hours may be exceedingly valuable. The same may be said of bacteriological or chemical examination of the faeces.

Estimations of sulphur intake with the food and its ratio with the sulphur of the urine are usually limited to institutions for medical research.

Furthermore, a few observations have been published which make one feel that the simple indican test is a better clinical indication of intoxication arising from putrefactive processes in the intestine than other more refined methods; or at least is a better indicator of the capacity of the organism to assimilate nitrogenous food.

If some knowledge can be gained of the origin and the difficulties which befall the precursors of indican in the organism, the interpretation will naturally tend toward truth.

The work of Ellinger has removed any doubt which may have existed in the past as to the source of urinary indican.

In those starving animals which could be prevented from eating their own feces, the indican reaction in the urine subsided and disappeared as death approached.

It could therefore not be formed during the course of proteid metabolism.

Gentzen has proved that the injection of skatol-amino-acetic acid (the mother substance of indol) into the cecum was followed by an abundant indican excretion.

If ingested with the food, or injected into the rectum, it was metabolized.

The formation of indol is, therefore, limited to the intestine, and it appears during the course of proteid putrefaction and as the result of microbic activity.

The conditions which promote its formation are pertinent points for inquiry in considering the excretion of indican in the urine.

Chemical Considerations

On the rough average, the aromatic nucleus of the proteid molecule, of which preformed indol is a part - amounts to about 5%.

In some proteids it is absent (gelatin), while in others it may exceed that amount.

Under some circumstances no indol may be formed, while under different conditions indol may be formed to some extent at the expense of other end-products.

Indol formation, except in grossly pathological states, is confined to the cecum and the ascending and transverse colons.

Not more than 14% of ingested nitrogen passes the ileocecal valve in approximately healthy conditions (Mayfadyen, Nencki, and Sieber: Journ. Anat. and Physiol., 1891, XXV).

These figures must be taken with a great deal of latitude, as the conditions are probably varying. There is no more certain way of causing increase in indican excretion than by excessive ingestion of proteid food.

On the other hand, this does not cause a proportionate increase in fecal nitrogen. The difference probably falls prey to bacterial activity as soon as the assimilation limit is reached).

This includes nitrogen in the form of true excrementitious matter derived from the mucosa above and the secretion of glandular organs contributory thereto. From 6 to 10%. passes the rectum in the feces.

It is assumable that nitorgen in almost any form may be utilized by microorganisms, but only certain forms of proteid will yield indol under any circumstances. Many forms of nitrogenous matter reach the ileocecal valve, but only a few contain preformed indol, or are capable of yielding it.

With regard to faecal nitrogen, it may be said that if a complete partition could be made in health and disease, it would give us much information as to the intensity of bacterial processes above.

This would not be a measure of the intoxication.

Only that part which is absorbed is concerned in the latter process.

For this reason intestinal putrefaction in the maintenance of nitrogen balance is ignored as the factors tend to balance each other to a small fraction.

Bacterial Considerations

According to Bienstock, Bacillus coli and other facultative aerobes which are "normal" inhabitants of the bowel, are regarded as defensive organisms as opposed to certain obligatory anaerobes (Bacillus aerogenes capsulatus, Bacillus bifidus, etc.), which are regarded as putrefactive organisms and capable of originating pathological putrefactive changes in the intestinal contents.

Bacillus coli and its associates exist in a vegetative state, limited in their activities by a peculiar combination of circumstances and by active defences of the host.

They expend most of their energy normally in propagation.

They cannot attack native proteid, but do form indol.

On the other hand, the obligatory anaerobes do disintegrate native proteid at the expense of some time and effort, but they are unable ordinarily to liberate indol (Rettger). Putrefaction of proteid without anaerobes is impossible.

Therefore indol formation results from the intervention of Bacillus coli and related forms, acting either on the products of anaerobic activity or on the products of normal proteolytic digestion which have passed along unabsorbed."

A good deal of stress is placed on this last point for this reason: ordinary attacks of biliousness in young people, accompanied by large indican excretion and resulting from over eating, presupposes.

The products of proteolytic digestion - the carbon nuclei and particularly peptones - are themselves capable of causing intense inflammatory disturbances in the enteron (the alimentary canal, especially of an embryo or a coelenterate), particularly in concentrated form.

There is also a very sharp limit to the capacity of the small intestine to assimilate and rehabilitate carbon nuclei into body proteid. This is especially true if the mucosa is in a state of catarrhal inflammation.

Variations in the Absorptive Power of the Intestine for Indol

It is by no means certain that under strictly normal conditions the mucosa of the large intestine absorbs any considerable quantity of indol, even if elaborated. That it does so in a vast majority of adults is no argument that it is normal in the strictest sense of the term.

Some light is thrown on this question by estimating the indol which appears in the feces and comparing it with the amount of indican excreted by the kidneys.

Baumstark has made such determinations and found that, with one exception, fecal indol was much greater than urinary indican. This occurred in presumably healthy persons and in those suffering from disease.

It would seem as if this variability in absorption is the first defence of the organism against the products of intestinal putrefaction.

For this reason, if for no other, any method of diagnosticating the presence of enterogenic intoxication by estimating proteid pure factive products in the feces is fallacious.

What has been said of the absorption of indol applies more particularly to that part of the intestinal tract which lies below the ileocecal valve - to that part in which "normal" putrefaction takes place.

In admittedly pathological conditions (such as ileus) putrefaction and the formation of indol is very rapid, and the appearance of indican in the urine is prompt and excessive (Ellinger and Prutz).

One can hardly refrain from saying that these very differences in absorption contribute in a striking manner to the value of the indican reaction as indicative of intestinal putrefaction, for in that part of the intestine in which indol is most readily absorbed its presence is certainly pathological.

The detoxication of indol, by union with sulphuric acid and potassium subsequent to oxidation, occurs mainly in the liver. Indoxylpotassium sulphate is, of course, indican. Any combination which the liver may make with glycuronic acid instead of sulphuric acid represents a distinct loss to the urinary reaction for indican. This union is not excessive, and probably happens only when the production of sulphuric acid esters is in great excess and the supply of sulphuric acid ions is limited (Schmiedeberg).

Between the intestinal tract and the urine there is a great loss of indol, totaling to from 40% to 75%. (Jaffé, Wang, Ellinger).

What is the fate of this lost indol?

Herter and Wakeman found that the:

> *"Living cells of the body and especially the hepatic and renal cells and the epitheliated cells of the intestinal tract have the power of absorbing considerable quantities of indol, as well as phenol, and tying them loosely in such a way that these bodies cannot be recovered by distillation."*

The proper interpretation of this phenomenon may lie in 2 directions.

There is a possibility that a certain portion of indol in an organism with vigorous oxidative capacity is disintegrated into primary carbon and nitrogen groupings, to be recombined in other ways or eliminated as simple end products and thus lost.

The benzene ring is exceedingly refractory to disintegration, and it is broken up by the organism only at the expense of considerable energy.

In considering the toxicity of indol or any of its derivatives, this point must be kept in mind, that excessive quantities of indol thrown into the circulation for a long period of time may impair oxidative capacity.

On the other hand, have we here another manifestation of defensive action on the part of the organism in that the cells at large are able to store indol or its derivatives - withdrawing it from circulation - until such time as circumstances and capacity permit of release in detoxicized form?

Perhaps both elements play a part.

The point of interest is the loss of indol in transit. It seems quite certain that the organism may change this factor within limits at different times.

That normal bile contains both ethereal sulphates and glycuronates in traces has been noted by Hammarsten.

Whether in pathological states this amount can be materially increased, thus delaying or preventing excretion by the kidney, is not known. As to the capacity of the kidney for the elimination of indican presented to it by the blood stream.

In general, renal epithelium takes kindly to sulphur in any form, for even in renal disease the elimination of sulphur parallels that of nitrogen.

Sulphates are excreted in the same ratio as urea, until the rate of elimination reaches a certain excessive point when the kidney refuses to maintain the ratio (Cushney).

However, this may not apply to ethereal sulphates. If one may reason from analogy, there may be occasions in the course of a nephritis when, by reason of great excess, portions of indican or its precursors are retained in the blood or there may be variations in the rate of excretion.

Possibly the regulating mechanism lies further back and the excess is retained or fixed in the body cells until the serum concentration has sufficiently diminished to permit its release. Brain tissue has this power (Herter).

Jaffé's original estimate of the "normal" excretion of indican for 24 hours was based on observations made on 8 presumably healthy people. One excreted no indican at all, and one excreted over 19 mg.

The average for the 8 was 6.6 mg. It was therefore concluded that the normal output was from 5 to 20 mg. per diem. The urines of heathy children rarely contain appreciable quantities of indican.

The same can usually be said of those adults of middle life whose organisms are in good condition and particularly those whose habits as to the use of meat are moderate.

Chittenden found during the course of his dietary experiments that the urinary ethereal sulphates gradually disappeared. Fermentative and putrefactive properties of the faeces diminished, as "Fletcherizing" subjects naturally ingested less meat, according to observations made by Fisher.

It seems quite possible that the organism might excrete 20 mg. indican daily and not suffer symptoms thereby, provided the oxidative capacity is high and the

process does not extend over too long a time.

Either of these provisions violated, and the subject will straight-way seek treatment. On the other hand, less than 20 mg. may suggest the source of subjective symptoms if the oxidative capacity is low.

In this class of cases the interpretation of the reaction really resolves itself into an inquiry concerning the ability of the patient to detoxicize products of intestinal putrefaction which may be arising at the time.

But if we assume with Jaffé that 20 mg. is about the limit of normal excretion, there is in this a basis for calculation with Obermeyer's reaction, which may he depended upon for clinical purposes; 20 mg. of indican in 1000 cc. of urine will yield with Obermeyer's reagent, as ordinarily practised in the laboratory, an index of somewhere between 50 and 75 on Folin's scale. Otto Folin (Amer. Jour. of Physiol, March 1905), as a matter of convenience, in reporting some urinary examinations, used a scale based on the colour of Fehling's solution.

A urine which precipitated a colour with Obermeyer's reagent equal to Fehling's solution was said to have an indican index of 100.

Exact determinations were obtained by diluting either the urine or the Fehling's solution according to the index, whether above or below 100. An index of 100 or several times that amount is not uncommon.

Heeding all factors given above as necessary for the production of such indices, it must be evident that such a symptom, and the intoxication it represents, is worthy of very serious consideration, particularly if there is any tendency for it to continue, or if it is accompanied by evidences of digestive, hepatic, or renal disease.

1. Urinary indican is a product of intestinal putrefaction. There may be putrefaction without the production of indol, but there cannot be indicanuria without putrefaction.
2. A maximum excretion of indican, that is, an amount which on Folin's scale gives an index of 100 or over, may be safely relied upon to indicate excessive intestinal putrefaction, and especially the intoxication arising therefrom.
3. A maximum reaction which gives an index under 100 may be significant, but its interpretation should be strictly guarded by the general condition of the patient, that is, by the oxidizing and excretory capacity.
4. A heavy indican reaction which markedly subsides under treatment undoubtedly indicates a lessening intoxication, but minor variations in the color index have no significance at present.

These are the rules which have been followed in my practice for some time, and which I have found very satisfactory.

In singling out one of many putrefactive products it has been impossible to do other than take a very narrow view of the subject as a whole.

There is much more evidence on the condition of which indicanuria is an indication.

Due allowance must be made for these considerations if the principles herein are to be applied to concrete cases in which intoxication arising from intestinal putrefaction is suspected." - Dr Harris A. Houghton, MD in "The American Journal of Medical Sciences", 1908.

The Neurasthenia of Auto-Intoxication

"The symptom-complex of Neurasthenia, has its source in Gastro-intestinal Auto Intoxication.

There are 2 ways by which man may be poisoned; either by a poison from without or by a failure to get rid of the poisons that are formed inside him, provided it is possible for the body to take them up again.

That neurasthenia may be caused by the former has been accepted.

Can it be induced by the latter?

Before answering this it will be necessary to answer the following questions:

Does the body form poisons within itself?

If so, where may they be found?

May they be taken up again into the body owing to a vicious condition of the bodily hygiene or a pathological condition of certain secreting surfaces?

If they may be so taken up, will they give rise to the symptom-complex of neurasthenia?

Bouchard in "Auto-intoxication in Disease", distinctly affirms that auto intoxication is an important cause of neurasthenia. So much for the academic side of the question.

Does the body form poisons within itself?

Referring to indicanuria, Musser quotes von Jaksch who states that large quantities of indican in the urine imply that abundant albuminous putrefaction or putrid suppuration is in progress in the system.

Musser adds that it must not be forgotten that indicanuria will often arise in simple constipation.

Osler tells what indicanuria is; states the origin of the indican and says it is a product of the decomposition of albumen under the influence of bacteria.

Boas in "Diseases of the Intestines", quotes Jaffe, Salkowski, Bauman, Brieger, and Senator to prove that indican in the urine is derived from the intestines and is a normal product, but becomes pathological in excess.

It is normal from 5 to 20 mg. daily; pathologically, it may reach 100 to 150 mg.

Nothnagel in "Diseases of the Intestines and Peritoneum", quotes Jaffe, who observed that obstruction of the small intestine causes marked increase of indican.

Constriction of the large bowel does not cause so much increase.

Indican is increased in diarrhoea as well as in constriction and constipation due to bowel stasis, provided the small intestine is at fault, that is, in typhoid when

there is disorder of the mucosa, and in other diseases confined or localized in the small intestines.

Ortweiler found that increased peristalsis alone does not necessarily cause increased indican in the urine, and may cause its absence owing to the sweeping away of the putrefactive material in the intestines.

From all of this it seems certain that the body does form poisons within itself.

What are these poisons and may they be taken up by the body instead of being expelled as they should be?

Bouchard has isolated 7 distinct poisons in the urine alone, and shows their action on living tissues. He proves the toxicity of the blood itself in its capacity of carrier of the poisons to the various excretory organs.

He convicts the bile of a tremendous toxicity.

Graphically, he gives the relative toxicity of urine and bile and shows mathematically that:

> *"If all the bile secreted by the liver passed directly into the blood of a man he would be poisoned by his own bile in less than 9 hours. If all the urine that his kidneys secreted passed directly into the blood he would be poisoned by his own urine in 2 days and 6 hours."*

He goes minutely and exhaustively into the subject of auto-intoxication, and leaves not a doubt of it in the reader's mind.

Muller and Ortweiler consider it certain that the absorptive faculty of the bowel plays the prominent part in the transfer of poison to tissue.

The body does form poisons within itself; they may be found in the urine, bile, venous blood (especially just before it gets to the liver), and in the arterial circulation itself.

Likewise, these poisons have been taken up from the gastrointestinal tract and are constantly in the process of being excreted by the various Emunctories.

In the healthy man compensation is balanced; the out-go equals the amount formed.

But, if any one or more pathological conditions exist - a failure to throw off the various poisons in adequate amounts, loss of the integrity of some mucous surface, stasis in the small bowel from any cause, an excessive intake of vicious material - what then occurs?

The intestinal tract is an ideal laboratory for the growth of bacteria.

It is a flexible tube, accessible at both ends, kept at a certain temperature and filled with the materials suitable for putrefaction.

A large section of it is lined with a secreting surface. It does not take much imagination to picture the condition of the man who is absorbing more of these various poisons than be can throw off.

The symptoms would naturally vary in degree and severity according to the

individual's personal equation, the excess of poison, and the susceptibility of his tissues.

Neurasthenics are such wholly or in part owing to auto-intoxication, when we realize the chances at hand for inducing this condition and consider what the results of it would naturally be.

This hypothesis is confirmed and strengthened by clinical experience. In this connection I wish to cite an instructive case:

CASE I

C. P., 29 years old. For about 2 years he has complained of not feeling well.

When asked to be more explicit he said he felt sleepy most of the time, complained of a. lack of tone and inertia associated with mental heaviness, constant fagged-out feelings, fullness in the head, and a generally tired-out feeling. He cannot exert himself or do things with any degree of enthusiasm as he would like to do and used to do.

He has headaches and neuralgias. He becomes very much depressed at times and does not feel the normal mental exhilaration and joy of life he was accustomed to feel. He has no cause for worry and his work is not exhausting. **His bowels are generally constipated.**

He says he has noticed a lump in the right abdominal region that varies in size from time to time. He has gone the rounds of physicians and has been treated accordingly.

His condition has been diagnosticated neurasthenia, hysteria, general nervousness, and hypochondriasis by competent observers of repute. He says that if his present condition should continue much longer he would feel that life would be too much of a burden. His muscular condition is excellent - no flabbiness, no pendulous abdomen. The heart and lungs are normal. There is no abnormal position of any of his organs. The tendon reflexes are active but not exaggerated. He exhibits a pretty constant series of habbit spasms, especially of the orbicularis palpebrarum and facial muscles. These express themselves at times as grimaces and are bilateral.

There seems to be a desire to keep certain of the eye muscles on the stretch. **He has had a number of attacks of sciatica and as a result there is some spinal curving.** Peristalsis is sluggish as demonstrated by the phonendescope.

Rectal examination shows some dryness of the contents and a good deal of adhesion of faecal material to the bowel walls. The sphincter muscles are exceedingly active and over-tense.

Here was a case of, so-called functional, neurasthenia; it had the symptom-complex without adequate anatomical findings to account for them, apparently.

The treatment was directed at the condition of constipation.

The result was good, as far as it went; some increase in weight, a better hygienic condition of the bowels and kidneys. It was not satisfactory, however, as no definite demonstrable cause for his trouble had been found.

A more extended examination of his urine was made and at once pointed to the real cause. There was a report from the Philadelphia Clinical Laboratory of "very high quantity of indican for normal 24 hour quantity of urine."

He was passing about 1.4 litres daily. Thus, it was pointed out, there were 2 large causal factors in the case to be considered: Heredity and Auto-Intoxication.

Another physical examination was made to find, if possible, any anatomical basis for bowel stasis or obstruction.

The abdominal lump was recalled and the patient directed to return at its next reappearance. This he did and a movable, balloon-like tumour was marked out in the region of the appendix. It was partially collapsible, but not entirely removable by palpation. Two High Enemas were injected to clear out the lower bowel and aid the examination.

The notes read:

> *"The water ran in easily traversing the descending, transverse, and ascending colon in turn arriving at the caecum. After the water was evacuated examination showed an irreducible mass in the region of the appendix. The bowel was flattened and the mass distinctly felt rolling under the fingers."*

Subsequently, four examinations of the urine exhibited indican in excess.

The facts were these: There was a constriction in the neighbourhood of the appendix resulting in bowel stasis.

This was considered sufficient to set up intestinal putrefaction with absorption of the resulting poisons; these, in turn, were held responsible for his neurasthenic condition. Operation was advised and carried out.

The notes of it include the following:

> *"The bowel and appendix were exposed. The latter was long, twisted, and bound to the former by adhesions. The bowel was much constricted by these adhesions. Nothing else was found to be abnormal; the kidney and gall-bladder were in a good position. Adhesions were broken up and the appendix removed. The tip of it was quite injected with haemorrhagic spots, but otherwise normal. In addition to the operation the sphincter ani muscle was thoroughly stretched."*

Just prior to the operation a differential blood count was made in the Pennsylvania Hospital laboratory; this was normal, 9 days after the operation the urinary indican was about normal.

One year later the report is:

> *"Examination of the urine shows no excess of indican."*

The patient is feeling like a new man and has recovered entirely his joy of living, enthusiasm, and right feeling - and he has not changed his occupation or mode of life, except that his bodily hygiene is kept as it should be.

This is the record of a case of neurasthenia due to auto-intoxication. It had persisted for years until the cause of the auto-intoxication was removed and then cleared up.

I have appended 8 cases (including the one herein enlarged upon) of neurasthenia occurring in private practice in Philadelphia, in which the symptoms pointed to auto-intoxication and the diagnosis was corroborated by the urinary findings.

Three have been improved by a course of treatment directed against the condition of bad bodily hygiene. Two have not been under treatment long enough to make any claims as to results. There is great satisfaction in finding a tangible cause for these cases that are without anatomical findings - a sign post that may point in the direction of health to many otherwise chronic cases.

Why is it that, when the urinary findings begin to indicate that the poisons of putrefaction are no longer excessive, the neurasthenic condition continues, in many cases, for a long time?

I wish only to touch on one point relative to this; **on the withdrawal of a poison that has been absorbed for a long time, the nerves seem to cry out in distress. This is a common experience and may have some bearing on these cases.**

CASE II

M. J. O'M. Male, aged 35 years. In February 1906, following a spell of continuous hard work, he began to feel tired, irritable, and unable to do his work satisfactorily. This was associated with a nervous dyspepsia and backache in the lower dorsal region. He was possessed by terrors of various kinds, especially if left to himself. His heart would palpitate easily and that would increase his fear. His weight is 79 kg. General physical condition is good. His abdomen is pendulous, and there is a slight lateral curvature of his vertebral column. All his reflexes are exaggerated and jerky.

Report of urinary examination: "Indican is high for normal 24 hour amount of urine; otherwise normal."

Treatment consisted in correcting the spinal asymmetry and over coming the sluggish tendency of the bowels by massage, rest, and change of scene. He has become entirely well.

CASE III

Mrs. C., aged 43 years. Father died of nephritis and cirrhosis of the liver. Her mother has diabetes. Pneumonia at 10 years of age; diphtheria twice; whooping-

cough and measles during early childhood.

When about 18 years old she had nervous prostration. Since then she has had attacks of nervous dyspepsia. She has grown quite stout in late years. During the last 6 months she has had persistent constipation, mental depression, intense lassitude, and headaches; gets tired upon slight exertion. With this there has been a harrassing fear of being alone or in the country and a feeling that she must be constantly on the go even though felling tired out.

Weight 84 kg. Abdomen pendulous and abdominal muscles flaccid and atonic. Conjunctivae are congested and icteric (affected with jaundice); tongue coated. Reflexes are very jerky.

Urinary examination showed: "Total amount of 24-hour urine 500 c.c.; marked increase in indican; slight increase in phenol; total sulphates equal 1.33 grams; conjugate sulphates equal 0.177 gram; preformed sulphates equal 1.153 gram; ratio of preformed to conjugate equal 6.5 to 1 ; normal ratio is 10 to 1."

Although there was no actual increase here in the amount of sulphates excreted there was a relative increase in the conjugate over the preformed. This goes hand in hand with increase in indican and phenol and helps to confirm the diagnosis of intestinal putrefaction.

Treatment consisted in correcting the intestinal sluggishness, by intestinal antisepsis, appropriate diet and exercises, together with massage.

The report of urinary examination, January 15, 1907, was normal except a slight deficiency in amount; she had increased the amount from 562 to 900 c.c. Her general condition was better in every respect. Her weight fell from 84 kg to 79 kg. There is yet a good deal to be done before she feels normal—habits to overcome, etc.

CASE IV

Mrs. 13., aged 28 years. Father died of fatty degeneration of the heart. Her mother is of a distinctly hysterical make up and always has been. Even when Mrs. B. was a child her mother made no attempt to control her outbursts. She was born at 7 months. Has always been constipated. As a child she craved "sweets" and was allowed to eat them at will.

From childhood she has suffered from apprehensions. Has always been very impressionable and in later years this has led toward hypochondria. At times she has the feeling of a tight band about the head; she becomes very depressed and weeps easily.

There have never been true delusions or hallucinations, although about 6 years ago she began to be suspicious. This passed away.

She is very thin. Her abdomen is pendulous. The left kidney is much too low. Heart and lungs are normal. Reflexes are generally somewhat increased.

There are no hysterical stigmata other than the "fillet."

Examination of urine shows a trace of albumin and indican in excess.

CASE V

Mrs. B., aged 41 years. Mother died of gastro-hepatic intestinal disease. Father died of a complication of grip, erysipelas, and senile dementia.

Since the birth of her first child she has never been well. She had 5 pregnancies in 8 years. About one and one half years after the birth of her last child she had purulent salpingitis and was operated upon; both tubes and ovaries were removed.

She was in bed 18 months. At this time she was dropsical.

It was several months later when she began to walk about. Shortly after she began to walk she developed hystero-epilepsy. During some of the attacks she would fall and has broken various bones.

These lasted for nine years after which their character changed—at times she has intense pseudo-angina following the attack, at other times she comes out of them quietly. About this time she developed marked dyspeptic symptoms with constipation.

For the last 3 years she has had constipation and diarrhoea in turn. When constipated there is intense headache with nausea and vomiting associated with scanty urine. After the diarrhoea there is free micturition and relief from headache. She complains of mental depression, inability to attend to her household duties, and intense headaches.

There is considerable ballooning of the bowels at times.

Examination of urine showed indician "high for 24 hour amount."

Treatment was directed against the intestinal putrefaction with the result that she no longer has the epileptoid attacks, is almost entirely free from her headaches, and is able to attend to her duties.

I showed this woman to Dr Wm. G. Spiller, who concurred in the diagnosis of hystero-psychic-epilepsy with intestinal auto-intoxication as its basis.

CASE VI

Mrs. C., aged 38 years. Good as to health; both parents Were emotional. She was perfectly well up to 15 years of age when she had a "nervous breakdown."

This was characterized by unreasoning fears of various kinds. There were no hallucinations or delusions. She had fits of depression and crying.

This lasted about one year and there were hysterical stigmata exhibited, that is, spells of apparent unconsciousness that were not epileptic. She was married at 18 years of age; has never been robust since.

At times she will feel quite well and then have a period of nervousness and mental depression. She complains of lassitude, tired feelings, mental depression, and fear - fear of crowds and being alone. Her mode of life does not account for them - there is no apparent cause. Her symptoms have been more severe for the last 2 years. Her bowels have been very irregular up to 2 months ago; since then they have been regulated by internal treatment.

Sleep is very unsatisfactory and appetite poor.

Eyes are watery. Conjunctivae are hypesthetic. Reflexes are exaggerated. Heart and lungs were normal. Examination of urine shows a trace of albumin and indican high for 24 hour amount of urine. **Treatment was directed against the intestinal putrefaction and urinary insufficiency, and the result has been very satisfactory.**

CASE VII

Mrs. S., aged 34 years. Mother died of cancer. Father alive. One sister died of tuberculosis. From childhood she has been of a very neurotic disposition. Up to her first menstrual period she had what she calls "spasms;" during them she was unconscious. These lasted from her 9 to her 14 years.

For the last 9 years she had fits of mental depression. About one year ago she had a hysterical attack in which she lay for a time in a trance-like state, unable to speak but conscious of surroundings.

Since then, after each menstrual period, she has had severe headaches, vomiting, hysterical spells in which she lies as if in a faint, but conscious of everything. She complains of being easily tired, of in ability to concentrate her thoughts, and of numbness and tingling in her fingers. She is habitually constipated and passes but little urine.

She complains bitterly of headache and dizziness, and fears she will become insane. Her emotions are easily aroused and she cries at the least provocation.

Patient is 11 kg overweight. Her heart is inclined to tachycardia. Breathing is sighing at times. Abdomen is pendulous, flabby, and fat. Otherwise her condition is normal except certain stigmata of hysteria, such as hypesthesia of half her body, irregularity of colour fields, diplopia at times.

Treatment was directed against her constipation and likewise against the hysterical element that was so prominent in her case; she promptly recovered from the latter.

In time the proper hygiene of her intestinal tract and kidney elimination bore fruit, and she become free from the neurasthenic element as well.

CASE VIII

Mrs. W., aged 36 years. Both parents were rheumatic. Her father had heart and kidney disease. She has been married 17 years. Seven years ago she was operated upon for the removal of one ovary. The same year she developed asthma which has been present at times ever since. She has always been of a nervous, worrying disposition.

Complains of asthma, mental depression, and fits of crying. She is easily tired.

She has worried a great deal about her husband's health. Her bowels are constipated and she is passing only thirty two ounces of urine in 24 hours.

Her symptoms are not attended with much distress, but are gradually

becoming more severe. Abdomen is pendulous. Examination of urine shows indican very high.

After treatment that was principally Dietetic and Hydrotherapeutic together with Massage and Regulated Exercises, she became much better, 9 months later examination of her urine showed a normal output of indican.

Conclusions

In the above cases certain points stand out prominently:

1. The hereditary taint and a neuropathic susceptibility.
2. The symptom of fear in its various phases, so common in intestinal diseases.
3. The most important as far as treatment is concerned, is the constant condition of intestinal putrefaction that has had to be overcome before any relief was achieved; this was in many of the cases associated with insufficient elimination of urine.

In cases of this kind there is often a hysterical taint engrafted on the original trouble that must be considered in treatment." - Dr. Thomas J. Orbinson, MD in "The American Journal of Medical Sciences", 1908.

Indicanuria And Its Significance

"Indicanuria is the presence in the urine of a perceptible quantity, more than a mere trace, of the indoxyl sulphate of potassium, of which the chemical formula is C8H6NKSO4. It is derived from anaerobic bacterial putrefaction of proteids.

Indol is first produced, and, at the time of absorption, is converted into a soluble indoxyl, which, in the juices of the body, unites with a base, usually potassium, and is excreted in the urine as indoxyl sulphate of potassium.

Normally, from 5 mg. to 20 mg. of this substance are excreted daily; abnormally, from 50 mg. to 150 mg. Certain observers have noted that indican is usually absent in normal children under 5 years of age. Indican may be constantly present in large, moderate or small quantities, or only occasionally present during certain hours of the day or certain days of the week or month.

In order, therefore, **that the presence of indicanuria** be not overlooked it is necessary to obtain urine for examination at different times during the day or week, or under conditions produced by variations in food, exercise, **or during the presence of one of the most marked symptoms of this affection, as for example, headache.**

Indican is often detected in the urine passed after supper (care being taken to instruct the patient to empty the bladder before beginning the meal) and may be absent at all other times.

Occasionally it may be necessary to modify the articles of food composing the

supper, so as to make it a test meal. The urine first passed on arising and retiring, as well as that taken from a 24 hour specimen, should always be examined.

Sometimes indican is observed only after the ingestion of certain articles of food, or combinations of food, which may be indigestible, unsuitable or in excess.

It must always be remembered that owing to an idiosyncrasy, certain patients suffer acute indigestion with marked toxic symptoms, when they partake of certain foods or combination of foods.

Clinically, indicanuria may be mild or severe, acute, chronic, or recurrent, and occurs as an independent affection or as a complication of other diseases.

The severe forms of intestinal toxemia simulate cholera, and may cause death in less than 1 week.

Indicanuria is significant of the absorption of the products of putrefaction, which putrefactive material is usually situated in the gastrointestinal tract, but under exceptional circumstances may be in other parts of the body.

It is well known that during putrefaction: phenol, cresol, fatty acids and gases (and other substances are elaborated), in addition to indol, skatol or methyl indol.

The test for indican is so simple and the test for other putrefactive products so difficult that gradually indican has assumed the position of an indicator of the absorption, not only of indoxyl, but in addition any one or any combination of the bodies produced by the decomposition of proteids.

Indicanuria may be absent when proteid decomposition is present if absorption is prevented, and it is conceivable that intestinal toxemia occurs in the absence of indicanuria.

Indol is a volatile aromatic substance of fecal odor, crystallizing in white glancing crystals, is practically insoluble, and as it passes through the mucous membrane it is converted into soluble indoxyl and is carried by the portal blood to the liver, where it becomes indoxyl sulphate and later the indoxyl sulphate of potassium.

When indican appears in the general circulation it is excreted as such by the kidneys.

Jaffe states that the subcutaneous injection of indol is followed by the appearance in the urine of large quantities of conjugated indoxyl compound. Herter maintains that indol is only moderately toxic to man and that small doses may produce frontal headache, mental irritability, insomnia and mental confusion, and that the continual absorption of enough indol to yield a constant strong reaction of indican in the urine is capable of inducing symptoms of neurasthenia.

Skatol is supposed to act as does indol.

Phenol is extremely poisonous, but phenol-sulphate is non-toxic. Phenol is usually coexistent with indican and is increased and decreased in like manner, the principal exception being in anemia and cachexia, in which indican is increased and phenol is decreased, and in hunger, in which phenol is increased and indican is decreased.

Cresol is supposed to act as does phenol.

During proteid decomposition of fatty acids, such as formic, acetic and propionic, are formed, and also certain gases, such as carbon dioxid, hydrogen, marsh gas and sulphuretted hydrogen.

These acids are probably but moderately toxic in the quantities in which they exist under ordinary conditions; but it must not be for gotten that small quantities of sulphuretted hydrogen are extremely poisonous.

On one occasion I administered per rectum sulphuretted hydrogen, which produced simultaneously rapid, intermittent, weak pulse, collapse, delirium, and a slight odour of this gas in the breath. These symptoms vanished in a few moments.

It is not improbable that in certain cases unknown or undiscoverable toxalbumins are formed which may be peculiarly poisonous even in very small quantities.

No exact knowledge exists as to the precise manner in which the body protects itself from the poisonous compounds produced during proteid decomposition, but it is believed that such an influence is exerted by the cells of the liver and intestinal mucous membrane.

Baumann was able to demonstrate that the liver contains a larger amount of ethereal sulphates than does the blood. Clinically, indicanuria occurs more readily when the hepatic function is disturbed than when this organ is normal.

Indicanuria not infrequently exists without symptoms. Occasionally putrefactive bodies are produced that are but slightly toxic, and certain individuals possess an inherited or acquired immunity, while others are peculiarly susceptible to very small quantities of these bodies. As it is unsafe to assume, that indicanuria produces no harm when symptoms are absent, prudence dictates the prevention of its formation.

The conditions which favour indicanuria are numerous and demand attention. Morbid conditions of the teeth, mouth, oropharynx, nose and sinuses connected there with, in their relation to the production of indol, possess an importance which is far too little recognized.

Not infrequently the buccal cavity contains much decomposing material, together with many micro-organisms, both fermentative and putrefactive. The odour often suggests decomposition and examination may reveal abscess of the gums, pyorrhea alveolaris, with soft, flabby, congested and contracted gums, forming numerous cavities, in which pus and food may be retained under conditions peculiarly favourable to decomposition.

A similar condition may arise from the long-continued presence of food between the teeth, especially when there is irregular dentition or caries.

Occasionally in the enlarged crypts of diseased tonsils decomposing cheesy material may be found and suppurative rhinitis or sinusitis is not uncommon.

When such conditions of the oropharynx, nose or sinuses exist it is manifest that food, even during mastication and before deglutition, may become infected and putrefaction begin.

Many causes favour the production of indol; such as simple excess of proteids from gormandizing; insufficient mastication or insalivation and too rapid eating; any condition paralyzing or lessening gastric, intestinal or colonic peristalsis, or retarding the onward progress of the gastrointestinal contents or interfering with the normal secretions of the stomach, intestines, pancreas or liver, etc.

It is evident, therefore, that indicanuria is to be expected in gastrointestinal or colonic atony or paralysis as well as in relaxation of the abdominal wall, producing gastroptosis or enteroptosis.

Again, hernia, ileus, appendicitis, local or general, acute or chronic peritonitis and pyloric or intestinal stenosis, constitute conditions favouring the growth of putrefactive bacteria.

The absence, diminution or excess of hydrochloric acid, by producing indigestion and fermentation, favour the production of indol.

Indicanuria has been observed in diarrhea, in association with indigestion, gastritis, enteritis, colitis, ulceration or obstruction of the small or large intestines, cholera, dysentery, Addison's disease and inanition. The deep importance of the recognition of indicanuria au a complication in typhoid fever I emphasized in 1904, in a communication read before the Pennsylvania State Medical Society.

Acute attacks of indigestion with furred tongue, offensive breath, constipation, mental and physical depression and headache, familiarly known as “biliousness” or congestion of the liver, are usually associated with indicanuria, and, in many instances, are examples of acute toxaemia due to absorption of products of decomposition of the intestinal contents. It is more than probable that minor attacks of toxicity occur without well-marked symptoms.

Recurring attacks of simple hepatic congestion, due to toxic poisoning, interfere with the normal excretion of bile, which in turn incites intestinal indigestion, fermentation and putrefaction, thus preparing the way for a similar attack on slighter provocation.

In the course of months a chronic congestion of the liver is produced, aggravated by recurrent attacks of acute congestion, and thus, if the toxaemia be moderate, in the course of years the clinical picture of hepatic cirrhosis may be developed.

Excessive formation of indol has been observed in various morbid states of the liver, with or without jaundice, in diseases of the pancreas, as well as in suppurative and gangrenous conditions of other parts of the body, as, for example, in empyema, gangrene or abscess of the lung and perityphlitic abscess; and has also been observed after the administration of turpentine or creosote.

Having thus far treated of indican as an indicator of toxaemia, let us now turn to the various effects of toxaemia. Acute attacks of toxemia are frequently associated with dark-colored urine showing hyperacidity, high specific gravity, indicanuria and skatoluria, or moderate albuminuria and choluria, cylindroids and a few hyaline tube casts. **As the toxaemia increases in frequency and intensity, or becomes chronic with exacerbations, the albuminuria and**

cylindruria increase, and eventually, in consequence of long-continued irritation of the kidneys produced by the excretion of chemical irritants, resulting from intestinal putrefaction, chronic interstitial and parenchymatous nephritis develop.

In the early stages, under appropriate treatment, these abnormal constituents in the urine disappear; again, in moderately severe cases, 3, 4 or 5 years may elapse before this result is obtained.

The circulation in the blood of the derivatives of putrefaction absorbed from the intestines produces varying degrees of anemia, which, as a rule, is of the chlorotictype, and in long-standing and severe cases this anemia may become so extreme as closely to simulate the clinical and blood picture of pernicious anemia.

The poison causes a rapid loss of haemoglobin, and a slow loss of erythrocytes, but does not materially interfere with the leucocytes.

The circulation in the blood of these toxic substances at irregular intervals over a period of many years may cause the development of arteriosclerosis from direct action on the walls of the vessels. In a number of cases the conclusion was irresistible that this was the cause of arteriosclerosis.

The relationship of indicanuria to the nervous system is varied and most interesting.

Several cases of Neuroretinitis, associated with persistent and marked indicanuria, have gradually subsided and then disappeared, when this chronic poisoning was prevented; and in like manner, Neuralgia or inflammation of other nerves have been produced.

Occasionally pains in various parts of the body, due to intestinal toxaemia, have been erroneously ascribed to rheumatism or gout.

One of the common symptoms of acute or chronic intestinal toxaemia is headache, either mild or severe, usually frontal, although it may be in the vertex or occiput.

The duration varies from a few hours to a few days and may occur at intervals of 2 or 3 days, or as many weeks or months.

An intermittent headache from this cause may continue unrecognized for months, and in one instance has been endured for 17 years.

Intestinal toxaemia is as frequent a cause of headache as errors of refraction (blurred vision; near-sightedness or far-sightedness).

Several examples of persistent insomnia, chiefly due to putrefactive poisoning, have come under my observation during the past decade.

Certain individuals are peculiarly susceptible to minute quantities of putrefactive poison; this peculiarity has been especially observed among neurasthenics, in this respect resembling the well-known idiosyncrasy to alkaloids, such as atropin, etc.

Chronic intestinal toxaemia may induce or complicate cases of neurasthenia.

It is not improbable that one of the reasons for the favourable results obtained from the use of a milk diet in treatment of neurasthenia is the incidental removal of an unrecognized toxaemia. **Again, intestinal toxaemia is a common**

complication of the various forms of mental diseases as seen at the Philadelphia Hospital, and occasionally it is the cause or complication of certain cases of epileptiform convulsions. The favourable course of many cases of pulmonary tuberculosis is interrupted by attacks of intestinal toxaemia, and has been more frequently observed since the treatment of tuberculosis by large quantities of milk and eggs has become more general. The diagnosis of this complication is absolutely necessary for success in treatment of tuberculosis where a specific diet, suitable for the individual, should be substituted for the one in more general use.

Putrefactive poisoning aggravates catarrhal inflammations of the respiratory tract and the recognition and removal of this complication is frequently followed by a marked amelioration of symptoms, and in like manner certain cases of bronchial asthma are greatly benefited. Eczema, pruritus, acne rosacea, and malodorous perspiration and breath have been observed in association with indicanuria. Intestinal toxaemia is a common disease in itself and a frequent complication of many diseases; its removal is very frequently followed by remarkable and prompt amelioration or disappearance of many distressing symptoms." - Dr Judson Daland, MD, Professor of Clinical Medicine at the Medico-Chirurgical College, in "Transactions of the Section on Practice of Medicine of the American Medical Association", 1909.

> *"Dr. Daland has rightly emphasized the significance of indicanuria and its importance as an etiologic factor in disease. A point which I wish to emphasize, however, is the close relation between indicanuria and diseases of the mouth and teeth. As a matter of fact, mouth symptoms are among the first manifestations of those disturbances due to or associated with indicanuria and its causes. Acid saliva, pyorrhea and affections of the alveolar process are almost invariably accompanied by indicanuria. The pioneer work in this particular line of Dr. Eugene S. Talbot of Chicago proved this assertion. Acidemia is also frequently found associated with indicanuria. Summing up these facts it will be seen that indicanuria is practically always associated with an excessive elimination of acid substances in the urine and a marked decrease in the amount of urea, two very important findings. I believe that the condition of acidemia or diminished blood alkalinity is of far greater importance than present medical opinion or the text-books would lead one to believe; that it is a probable cause of many obscure diseases and consequently deserves more extended attention and thorough investigation. Further, the reduction of this condition of excessive acidity by the judicious use of suitable remedies brings with it a speedy and decided amelioration of many indefinable ills." - Dr Henry R. Harrower, MD in "Transactions of the Section on Practice of Medicine of the American Medical Association", 1909.*

Toxaemia and the Elimination of Toxins

"As a matter of fact, most attacks of disease of any and all kinds get well, whether treated or not, if they have not passed from functional to organic.

It is said that eighty per cent who fall sick get well, or could get well without the aid of a doctor.

All so-called attacks of disease of whatever kind are crises of Toxaemia, which means vicarious elimination of Toxin that has accumulated above the saturation, toleration point.

These crises may be symptoms which we call cold, "flu", tonsilitis, gastritis, headache, or some other light malady.

They come today and are gone in a few days.

If treated, we say they were cured.

If they are not treated, we say they got well without treatment.

The truth is that the surplus toxin: the amount accumulated above the point which can be maintained with comfort; is eliminated, and comfort returns.

This is not a cure; it is one of nature's palliations.

When the cause or causes of enervation are discovered and removed, the nerve-energy returns to normal.

Elimination removes toxin as fast as developed by metabolism.

This is health; this is all there is to any cure.

In a few words: Stop all enervating habits; stop eating (wrong food); rest until nerve-energy is restored to normal.

When this is accomplished the patient is cured.

All other so-called cures are a delusion, and at the most a passing palliation; but enough such cures are performed daily to keep a large army of doctors and cultists in bread, butter, and a degree of respectability.

The cured patients, however, glacier-like, move steadily down to the river Styx; thousands and thousands of them years before their time, many even before their prime, and all maintaining a false belief concerning what disease is, and a more foolish notion concerning cures.

If eliminations falls far short of requirements; consequently toxin accumulates in the blood.

This adds a pronounced auto-toxin stimulation to that coming from overstimulating habits, and completes a vicious circle.

This complex stands for a disease-producing Toxemia, which will be permanent except as toxin crises, so-called acute diseases, lower the amount of toxin, again to accumulate and continue until the habits that keep the body enervated are controlled.

Perfect health cannot be established until all enervating habits have been eliminated.

Without Toxaemia there can be no disease.

The waste-product of metabolism is toxic, and the only reason why we were not poisoned by it was because it was removed from the organism as fast as produced.

If toxins are retained in the blood, when there is a checking of elimination.

When we have a normal nerve-energy, organic functioning is normal.

Enervation causes a checking of elimination.

Eureka!

The cause of all so-called diseases is found!

Enervation checks elimination of the waste-products of metabolism.

Retention of metabolic toxin: the first cause of disease!

When the irritation is not continuous, and toxin is eliminated as fast as developed, to the toleration point, normal functioning is resumed between the intervals of irritation and toxin excess.

For example, a simple coryza: running at the nose, cold in the head), gastritis or colonitis. At first these colds, catarrahs, or inflammations are periodic and functional; but, as the exciting cause or causes: local irritation and Toxaemia; become more intense and continuous, the mucous membranes of these organs take on organic changes, which are given various names, such as irritation, inflammation, ulceration, and cancer.

Germs and other so-called causes may be discovered in the course of pathological development, but they are accidental, coincidental, or at most auxiliary; or, to use the vernacular of law, obiter dicta.

The proper way to study disease is to study health and every influence favourable or not to its continuance.

Disease is perverted health.

Any influence that lowers nerve-energy becomes disease-producing.

Disease must be due to poison, and that poison, to be the general cause of disease, must be autogenerated; and if disease is due to an autogenerated poison.

What is the cause of that autogeneration?

Food eaten after putrescence had begun, or from poisoning due to the development of putrescence after ingestion.

The present day strenuousness causes enervation, which checks elimination, and the retained toxins bring on Toxaemia.

Crisis of Toxaemia

According to the Toxin Philosophy, every so-called disease is a crisis of Toxaemia; which means that toxin has accumulated in the blood above the toleration-point, and the crisis, the so-called disease: call it cold, "flu", Pneumonia, Headache, or Typhoid Fever: is a vicarious elimination.

Nature is endeavouring to rid the body of toxin. Any treatment that obstructs this effort at elimination baffles nature in her effort at self-curing.

Drugs, Feeding, Fear, and Keeping at Work Prevent Elimination

Every so-called disease is a complex of symptoms signifying a crisis of Toxaemia: nature's house-cleaning.

And nature can succeed admirably if not interfered with by venders of poison, who are endeavouring to destroy an imaginary entity lurking somewhere in the system, which is mightily increased and intensified by the venders' cures or amelioratives.

Is there nothing for a doctor to do? Yes, of course!

He should enter the sick-room with a smile and a cheerful word, free from odours, and neat and clean; be natural, and free from affectations.

He should advise an enema daily: a stomach-wash if it is needed; something warm to the feet; perfect quiet; no food, liquid or solid, and positively no drugs, but all the water desired; a warm bath at night; a hot bath when necessary for pain, and as often as necessary to secure comfort.

Rest, warmth, fresh air, and quiet are curative.

Then the physician should educate his patient into proper living habits.

All acute so-called diseases can be cured; and the patient will stay cured if he will practice self-control concerning the enervating habits that brought on his crises of Toxaemia.

Where this is carried out faithfully, so-called chronic diseases will never be built. It is an art to maintain a state of cleanliness conducive to health.

The worn-out tissue must be removed: eliminated, from the blood as fast as it is formed, or it accumulates, and, as it is toxic, the system will be poisoned.

This becomes a source of enervation.

Elimination of the waste-products of tissue-building is just as necessary as the building-up process.

As these 2 important functions depend on each other, and as both depend on the proper amount of nerve-energy to do their work well, it behooves all people who would enjoy life and health to the full to understand in what way they may be frugal in using nerve-energy so that they may learn how to live conservatively or prudently, thereby enjoying the greatest mental and physical efficiency, and also the longest life.

Enervation is a Cause not a Disease

Enervation "per se" is not disease. By causing a flagging of the elimination of tissue-waste, which is toxic, the blood becomes charged with toxin, and this we call Toxaemia - poison in the blood.

This is disease, and when the toxin accumulates beyond the toleration-point, a crisis takes place; which means that the poison is being eliminated.

This we call disease, but it is not. **The only disease is Toxaemia, and what we call diseases are the symptoms produced by a forced vicarious elimination of toxin through the mucous membrane.**

Every organ of the body; for any organ that is enervated below the average standard from stress of habit, from work or worry, from injury, or from whatever cause, may become the location of crises of Toxaemia.

Rest and total abstinence from food, liquid and solid, and reforming all enervating habits, will restore nerve-energy; the elimination of toxin through the natural channels will take place, and full health will return.

An individual that keeps his system enervated by tobacco, alcohol, sugar and sweets of all kinds, coffee, tea, excessive eating of butter and bread, too much rich cooking, excessive eating of all foods, excess of sensual pleasures, etc., will bring a crisis of toxaemia.

Keeping the system enervated prevents the re-establishment in full of elimination through the normal excretory organs.

The organism, as time runs on, becomes more tolerant of toxin, and the "catching-cold habit" shows fewer crises of Toxaemia.

A greater number of the mucous membranes are requisitioned to carry out vicarious elimination.

The whole organism begins to show deterioration.

The so-called chronic diseases begin to manifest.

Every so-called disease has the same inception, evolution, and maturity, differing only as the organic structure involved differs.

Treating the various symptom-complexes as distinct entities is fully as scientific as salving the end of a dog's tail for its sore ear.

All Diseases are the Same Fundamentally

The cause travels back to Toxaemia, caused by enervation, which checked elimination; and enervating habits of body and mind are the primary causes of lost resistance enervation.

Every chronic disease starts with Toxaemia and a toxaemic crisis.

The crises are repeated until organic changes take place.

The chain of symptoms range from cold or catarrh to Bright's disease, tuberculosis, cancer, syphilis, ataxia, and other so-called diseases; all, from beginning to end, symptoms of the cumulative effects of crises of Toxaemia.

Primary Cause of Disease

The primary cause of disease is Toxaemia.

Before Toxaemia is developed, natural immunization protects from germs, parasites, and all physical vicissitudes.

Toxin is a by-product as constant and necessary as life itself. When the organism is normal, it is produced and eliminated as fast as produced.

From the point of production to the point of elimination, it is carried by the blood; hence at no time is the organism free from toxin in the blood.

In a normal amount it is gently stimulating; but when the organism is

enervated, elimination is checked.

Then the amount retained becomes overstimulating, toxic, ranging from a slight excess to an amount so profound as to overwhelm life.

The treatment is so simple that it staggers those who believe in curing.

Heroic medicine (Medical Trade) treatment is disease-building.

Find in what way nerve-energy is wasted, and stop it, stop all nerve-leaks.

Then returning to normal is a matter of time, in which nature attends to all repairs herself. And nature resents help, from medical officiousness.

"Find out in what way nerve-energy is wasted, and stop it; stop all nerve-leaks."

Enervating habits; for example: Stop worry; stop smoking; stop stimulants; control your temper; stop eating too rapidly; stop allowing yourself to become excited." - Dr. John H. Tilden, MD in "Toxemia Explained, The True Interpretation Of The Cause Of Disease", 1926.

Autointoxication as a Cause of Mental Disease

"Autointoxication is now generally recognized as a cause of several of the mental disturbances, the aetiology of which has hitherto baffled the medical profession.

When intoxication has persisted for sometime or becomes chronic, actual mental disease may follow.

The autointoxication from the different glands probably determines certain forms of mental disturbance, but temperament, undoubtedly, is a factor in determining just what form of mental disturbance the intestinal toxins bring about.

In some persons alcohol causes exhilaration or grandiose ideas, in others, motor excitement, combativeness or depression, with or without emotion. In both alcoholic intoxication and autointoxication, as the poisoning becomes chronic the patient suffers from delusions, hallucinations and illusions.

The alcoholic and drug psychoses are among the most difficult we have to treat because they are probably mixed cases; alcohol or drugs causing a disturbed metabolism resulting in other toxins being liberated in the system.

The problem before us is to determine what toxins we have to deal with in certain mental disturbances and whether disturbed conditions are brought about by an over or under supply of the secretions from the glands.

What is autointoxication?

One physician, Bouchard, says that it is "self poisoning of the individual."

Kraepelin considers dementia praecox (schizophrenia) to be an organic brain

disease, probably caused by the action of some harmful agent which damages or destroys the nervous elements of the cortex.

The absence of any palpable external causes has led Kraepelin to suggest that we have to do with an autointoxication which possibly has some relation to the activity of the reproductive glands.

Dr John Macpherson, MD, FRCP, in the Edinburgh Medical Journal, July 1905, in Morrison lecture, No. 4, delivered before the Royal College of Physicians, Edinburgh, on Insanity states, in summing up his paper, that:

> *"The confusional insanities are due to the auction of poison on the nervous system, especially the brain. Their type is delirium, no matter whether the delirium is acute and of short duration, or chronic and prolonged. They all result in an injury to the delicate structure of the brain cortex. That injury is more or less severe according to the nature of the poison, and according to the resistance which the brain cells offer to the action of the toxin."*

How do we know that there is a poison present in the blood of patients suffering from confusional insanity?

Had we no other proof than the symptoms, the pathological results, and the course of the disease, there could scarcely remain a doubt as to its existence.

We are indebted to Dr. Lewis Bruce of the Murthly Asylum for direct proof of the presence of a toxin which in all probability is the direct cause of the symptoms of this group of affections.

There are 2 main diagnostic symptoms of infection of the system by toxins, namely, pyrexia or fever and leucocytosis.

In some intoxications both are present; in others, e.g., phthisis and typhoid fever, there is pyrexia but no leucocytosis.

In others, there is leucocytosis but no marked pyrexia. To this latter group belong the confusional insantities which I have named subfebrile.

Dr. Bruce's description is so important that I have asked and received his permission to quote some extracts from his published writings. It should be explained that in normal persons the number of leucocytes per c. mm. of blood is 6,000 to 10,000 - they should not exceed 12,000.

> *"Early in the disease and coinciding with the hyperleucocytosis (which was found on admission to be from 15,000 to 17,000) the percentage of polymorpho-nuclear cells was frequently above 70. An increase in the number of polymorpho-nuclear cells is considered a certain sign of toxaemia. Later in the disease, during relapses, it is quite common to get a hyperleucocytosis of 20,000 or 30,000, with a polymorpho-nuclear 80% or even higher. A relapse generally is preceded by a fall of the leucocytosis to 10,000 or 13,000, with a low polymorpho-nuclear percentage. As the excitement increases the leucocytes gradually rise, and the percentage of the polymorpho-nuclear cells also rises until the attack reaches its*

height. When such a case recovers, the leucocytosis remains high. A notable feature of all these diseases is the fact that upon recovery taking place, a hyperleucocytosis is present for months and even years after leaving the asylum. In cases which do not recover, but become chronic, the leucocytosis falls, and the percentage of polymorpho-nuclear cells is often below 50."

This is a startling fact, the importance of which is far reaching. The object of a hyperleucocytosis is, of course, protective. The leucocytes increase in the blood for the purpose of protecting the system from the encroachments of the poison. Their role is always protective. The intoxication of the system does not cease when a patient has recovered from the mental disturbances manifested by the continued leucocytosis. When the poison has done its worst, down come the leucocytes.

"Similar changes in the leucocytes and other blood constituents, indicating indubitably a greater or less intoxication, have been shown by Dr. Bruce to exist in general paralysis, hebephrenia (chronic schizophrenia), and even in alcoholism. This confirms Kippel's contention, who long ago held that the toxin in alcoholism was a secondary one, and that alcohol only predisposed the system to invasion by other poisons from the alimentary canal."

Dr. Alfred Gordon, Associate in Nervous and Mental diseases, Jefferson Medical College; Examiner of the Insane at the Philadelphia General Hospital, in a paper read before the American Medical Association, June 1906, (Jour. A. M. A., 5 Jan. 1907) **on "Migrainic Psychoses," says, of the immediate cause of migrainic attacks, that they lie in autointoxication.**

He further says:

"Abundant material concerning mental disturbances in endogenous and exogenous intoxications is now on record. The studies of indol indoxyl, indican, skatol, acetone in their relation to certain psychoses are too well known to dwell on. Interesting and instructive are the studies of Richardson, who made exact quantitative estimation of indol in various mental and nervous disorders. The conception of autointoxication is so far advanced that a number of diseases can be readily explained on this basis. Suffice it to mention, in mental disturbances following infectious diseases or puerperal states, to see that a toxaemia is the immediate causative factor of the cerebral derangement. In this connection it is interesting to call attention to the observations on variation of leucocytosis. When leucocytosis is artificially stimulated (which is Nature's method of combating toxins) there is an improvement in the patient's condition. Among all the organs which are capable of becoming the seat of endogenous intoxication, the gastro-intestinal tract is the most important. It is the fons et origo of various toxins."

H. A. Houghton, of Long Island, N. Y., in an article on "The Indican Reaction as Evidence of Enterogenic Intoxication", American Journal of Medical Sciences, Philadelphia, April 1908, says:

> *"Urinary indican is a product of intestinal putrefaction. There may be putrefaction without the production of indol, but there cannot be indicanuria without putrefaction."*

Of acute melancholia Regis says:

> *"The gastro-intestinal complications are almost invariably encountered. They consist of dyspepsia with hyperacidity, flatulence and constipation. The breath of melancholiacs is strong and offensive, especially in the patients who do not eat. The secretions are diminished. The pulse reaches 100 to 120, but may fall to 35 or 40. The lesions of acute melancholia are hardly known. The visceral alterations, particularly those of the abdomen, are perhaps more constant and pronounced. This is the reason why so much influence has always been attributed to them in the production of melancholia, whatever might be the mechanism."*

Regarding treatment, he says:

> *"The best results, in mitigating or keeping down the attack, are obtained by instituting a medical treatment intended to combat the phenomena of autointoxication; that is repeated purgation and gastrointestinal antisepsis."*

Rachford says:

> *"Autointoxication which, strictly speaking, is due to the presence of autogenetic toxins in the blood, is one of the most important, and one of the least understood, of all the causes of neurotic disease, both in adults and in children. Perhaps the most tangible results of recent studies in autointoxications relate to acid intoxications. By acid intoxications is meant an increase of normal or abnormal acids in the body media."*

Ch. Bouchard, Professor of Pathology and Therapeutics, Member of the Academy of Medicine, and Physician to the Hospitals, Paris, in his Lectures on "Autointoxication in Disease, or Self Poisoning of the Individual," says:

"Pasteur has isolated as many as seventeen microbes from the mouth, and that Metchnikoff has demonstrated that man is born free from microbes.

Their first implantation occurs in the act of parturition, for soon after birth the skin and mucous membrane become infected with them, either from the air or

from the water with which the infant is washed.

As early as 4 hours after birth bacteria have been found during warm weather in the intestinal contents. Usually this is delayed until 10 to 17 hours afterwards.

It is in the intestinal tract that microbe flora grow most abundantly and it is observed that these vary with changes of diet whether purely vegetable or animal.

Their presence is independent of food, for micrococci and bacilli have been found in the meconium of infants before any nourishment has been taken.

No sooner, almost, is a baby given his mother's milk than variations occur in the microbes of his intestine: The bacillus bifidus appears.

Cow's milk also favours the development of this micro-organism along with the colon bacillus, streptococci, straphylococci, lactic acid, bacilli, etc. According to Vignal and Suckdorf, an adult man passes daily in his faeces from 30,000,000,000 to 50,000,000,000 of bacteria.

The harm these microorganisms do is through the products which they form which when absorbed are toxic, e. g., indol and skatol.

Although many of the bowel micro-organisms in health are harmless, they can yet become extremely virulent when their surroundings are altered, as is seen in accidental kinking of the intestine, internal strangulated hernia, or in a limited mucoenteritis.

Man forms in 8 hours enough poison to kill himself by his hepatic secretion.

Now in 24 hours the urine does not eliminate half the quantity necessary to poison a man; the urine of 2 days and 4 hours would be required to do this.

The volume being equal, bile is 9 times as poisonous as urine; in an equal period of time the biliary secretion represents a degree of toxic power 6 times as great as the urinary secretion.

I have shown that bile, decolored by carbon, has 1/3 of the toxic properties of bile in its natural condition.

In any case, we must never neglect in autointoxication, to keep up the strength of the patient so he may have time to eliminate the poison.

Sometimes we only require to keep him alive a few minutes more in order to save him; we cannot supply him with radical force, but what he requires is active force.

Thus we are led to administer, not tonics, but stimulants, which may awaken some force remaining latent.

The alimentary canal, however, is an important source of poison; it contains, in addition to the potash supplied by various foods and the bile, the products of intestinal putrefaction.

I had to take up this question of intoxication by putrid products from the points of view of many different experimentalists, Gaspard, Panum, Hemmer, Bergmann and Schmiedeberg, Zulzer and Sonnenstein, Selmi, Gautier, Brouardel and Boutmy.

Then I studied intestinal putrefaction; I showed that alkaloids exist in faecal matter; that these alkaloidals are of several kinds and that when those of one kind predominate in the intestines, we also find they predominate in the urine. I

established, according to Stich, the toxicity of faecal matter.

I analyzed the elements of this toxicity, and showed that it is due mainly to potash and ammonia, but that, when freed from these 2 elements, faecal matter still retains a certain degree of toxicity which must not be overlooked.

I have shown that intestinal antiseptic treatment, which causes the alkaloids to disappear from faecal matter and urine, diminishes the toxicity of both.

Nitrogenous food is much more likely to induce autointoxication than will carbohydrates. The freer use of milk and the return to a simpler diet are called for, since their use is followed by a reduction of ethereal sulphates in the urine.

Constipation must be overcome by diet and by aperients.

When these fail the administration of intestinal antiseptics becomes a necessity and medicines of this class, if they are to do any good, must possess little solubility and be, therefore, slowly absorbed so that they can traverse the length of the intestines.

Muller is not a believer in intestinal antiseptics; he doubts their efficacy; he maintains that there is no proof that iodoform, naphthol menthol, and the salicylic preparations diminish the quantity of ethereal sulphates in the urine or that these drugs influence intestinal putrefaction.

My own experience is quite contrary to that of Muller. Again and again I have seen the most marked benefit follow the administration of intestinal antiseptics.

Charrin found after administering 4 grams of naphthol-beta in 24 hours to 3 patients who were suffering from chronic enteritis that he had succeeded in suppressing 1/3 of their urinary toxicity. In hepatic disease Surmount similarly diminished urinary toxicity by one-half. It is the sparingly soluble intestinal antiseptics, such as salol, thymol, and naphthalin, that do good. The treatment of autointoxication by means of intestinal antiseptics is of little use without due attention being also paid to such prophylactic measures as careful dieting and the administration of suitable aperients."

Dr. Campbell Meyers, of Toronto, in a paper on "Neurasthenia in Some of its Relations to Insanity", calls attention to cerebrasthenia or brain exhaustion, among the causes of which he says are autointoxication from the absorption of toxins from the intestinal tract, as evidenced by the excess of the ethereal sulphates in the urine.

In conclusion he says:

> *"In regard once more to the urgent necessity of suitable treatment in the early stage of the disease, and before the development of any delusions I am convinced, after an experience of more than ten years, devoted exclusively and under exceptionally favourable circumstances, to the study of nervous diseases, and especially of those of a functional nature, that in their early treatment we have a prophylaxis of insanity, which for practical value can scarcely be over-estimated."*

In a paper on "The Prodromata of the Psychoses, and their Meaning," T. S. Clouston, MD, President of the Royal College of Physicians, Edinburgh, says:

> *"The neurologist who is called in to see a woman suffering from an unusual form of headache, with anorexia, insomnia and obscure paraesthetic sensations, often misses the real point of the case because he does not realize that such symptoms are, in this particular patient, higher cortical in origin, and may mean an attack of acute mania in a week if nothing can be done to arrest their course. The psychiatrist often considers a mental attack as being sudden in origin, and puts it down as an un-led-up-to mental explosion, when in reality there had been sensory and motor, sleep and other signs which would have proved the existence of previous autointoxication, nerve exhaustion, or other disturbance. Often they assume paraesthetic forms, giddiness, creeping feelings, and sensations of weight or lightness, of heat and cold; they are often so peculiar in character that the patient cannot describe them. They complain of "queerness in the head", "soreness", "discomfort", as if they had "no feeling in the head"; there is scarcely any paraesthesia that I have not met with. Now what is the cause of such headaches? What is their precise relationship to the mental disease which succeeds them? Are they toxaemic in character? And if so, what is the source of the toxin? Even if they are toxaemic this may be merely a secondary and intermediate stage and not the real primary cause. Through what series of influences does the toxaemia originate? Nutritive and Digestive Disturbances. Toxic symptoms arising from the intestinal contents have attracted much attention, and all sorts of bowel disinfectants have been used, in some cases with very good effect. The relief experienced through such a smart purge is a commonplace in therapeutics in such cases.* ***I believe many attacks of insanity are warded off by this means, just as attacks of epilepsy are so often prevented. The acuter insanities and general paralysis are specially apt to be preceded by marked intestinal or gastric catarrh. The modem toxic school has pushed the theory of intestinal infection so far as to attribute most of the cases of melancholia, of acute mania and general paralysis, to the toxic effects of adverse bacteria, which most commonly originate in the alimentary canal.****"*

Dr Paul Dubois, Professor of Neuropathology at the University of Berne, speaking of nervous disorders, says:

> *"In short, when pathological anatomy discovers a lesion, a focus of inflammation, a haemorrhage, a thrombosis, and when chemical analysis discloses a condition of intoxication, we no longer speak of neuroses, even though the symptoms might have been essentially "nervous". We thus recognize the first cause of the clinical syndrome in the various somatic affections, syphilis, tuberculosis, arteriosclerosis, alcoholic intoxication, uremia, etc."*

Bianchi, under ''Acute Delirium,'' says:

"Were we to consider acute delirium as an expression of grave intoxication, we should have no difficulty in conceiving that it might sometimes be an illness in itself."

Under Etiology, he says:

"On the real nature of the intoxication hangs the keen discussion aroused by the bacteriological researches carried out in my clinic. The discovery of a particular bacillus first described by Piccinino and myself, and confirmed by some, denied by others, has led to an unquestionably happy result, inasmuch as the majority of those who have repeated the investigations (Rasori, Ceni, Pottes, Cabitto, Alessi, Capelletti, Kalzowske) have found either the same bacillus, or something analogous, or other micro-organisms, such as the staphylococcus aureus, diplococci, streptococci, etc. When we consider that the bacterial varieties met with at the outset in other acute curable forms are no longer found in the blood of the patients, once the first phase of the psychopathy is past, these results indicate that the bacteria are related in some way, directly or indirectly, with the genesis of the disease. The problem is by no means easy of solution, but we can hold it erroneous to say that the presence of these micro-organisms is casual or due to penetration into the blood in the period preceding death. These 2 objections presented by Ceni and Capelletti are overruled by the fact that, in the initial phase of the acute grave psychopathies, the bacterial finding is often positive, whilst later it is almost always negative, just as it is negative when the disease ends in recovery. It is also a fact that in acute delirium the bacillus has been found in the blood, not only in the period preceding death, but also during the second phase of the disease, several days before death." He follows with an outline of the course of the treatment which includes intestinal disinfectants, lavage, sponging, milk diet, salol, etc."

Treatment

When a patient is brought to me suffering from acute or confusional mental disturbance or profound mental depression, I have an analysis immediately made of the faeces, urine and blood, and repeated analyses should be made within a few days.

If the findings indicate an auto or selfintoxication, I start at once with High Enemas of normal salt solution, with salt baths and often with hot packs for the purpose of elimination. At the same time I prescribe tonics and antiseptics.

In giving the High Enemas of normal salt solution and as soon as possible I give not less than 3 quarts, having the patient retain it as long as possible.

In case High Enema is not practicable, saline infusions may be given.

Mosher, of Albany, says the use of saline infusions possesses remarkable properties as a combined stimulant and sedative.

In Toxaemia and Delirium it not only relieves symptoms, but sometimes saves life.

Buttermilk or sour milk I have found very valuable as an adjunct in treating depressed cases, but it must be prepared in hygienic surroundings and from milk which has had the butter extracted from it if the best results are to be obtained.

Buttermilk prepared by using the whole milk and tablets of Bulgarian lactic acid bacillus I have found is not well borne by many patients and others soon tire of it.

I have never yet used the colon vaccine but I am not unmindful of its possible advantages.

C. Spencer Kinney, MD, First Assistant Physician, Middletown State Homeopathic Hospital, Middletown, N. Y., in the State Hospitals Bulletin, July, 1907, writing on "Melancholia and its Treatment" says:

"In melancholia we recognize an exhaustion of nervous strength which calls for rest and nutrition. That this may be accomplished, the elimination of all waste products is brought about by drinking freely of pure water and by irrigating the bowels every third day with water that has been boiled, used as hot as possible, and retained until it has been absorbed and passed through the kidneys. The quantity to begin with should be about one pint, and may be increased to three pints without difficulty. This should always be used hot to escape the unpleasant symptoms liable to follow the use of cold water. It has been claimed that the frequent use of this method produced a weakness of the intestinal canal, rendering its condition worse than the difficulty the treatment was supposed to remedy, but, after employing it a number of years, nothing but praise can be given it. In cases where the emaciation has been rapid, oil, about 2 ounces with each enema, should be given, and retained by the patient. The more of this oil that is absorbed, the more quickly a healthy action of the intestines will return. Where this flushing has been continued from one to three months, as seemed necessary, a marked change for the better has occurred in every patient on whom this treatment has been employed. It eliminates the effete material retained in the intestinal tract, induces a freedom from autoinfection, and consequently allows a more thorough oxygenation of the blood, and permits better results from absorption.

Any condition of constipation in a case of melancholia is an evidence of lack of care of the practitioner in charge of the patient. Intestinal antisepsis is of as much value in the treatment of melancholia as it is in the treatment of typhoid fever or of cholera. Irrigation of the bladder should be employed whenever the urine becomes thick with sediment, and it may also be used in the case of enlarged prostate."

Of melancholia, he says:

"The patient being under the direct observation, the bodily functions are closely watched, and every means taken during this period to establish a functional regularity. Under this method constipation is a rare occurrence. The heart becomes stronger by rest and by the method of treatment previously described. When the patient must be fed by a tube, bovinine (1 teaspoonful), Mellin's food (2 teaspoonfuls), hot milk (250ml), have been found very satisfactory, patients living on this for 2 or 3 years at a time without difficulty, and in a number of instances recovering."

In an editorial in the Journal of the AMA, 22 June 1907, the editor says:

"Common salt given, forms a rapidly acting and effective cathartic.
A small teaspoonful of table salt is dissolved in a glass of cold water and a few drops of lemon juice added. This is swallowed and followed immediately by another glass of cold water. The patient should not remain in bed after the draught, which usually acts thoroughly as a cathartic in a short time.
The cleansing of the intestinal canal should be followed by limitation and regulation of the diet.

Intestinal antiseptics should possess the following properties:

1. They should be non-poisonous in the doses in which they are efficient as antiseptics.
2. They should be capable of mixing more or less thoroughly with the intestinal contents.
3. They should not be readily absorbed.
4. They should be soluble enough to yield their antiseptic constituents, but not so soluble as to be readily separated from the mass of the intestinal contents.

If the intestinal tract is diseased, however, it is probable that irritating antiseptics may rather increase bacterial growth, because the injurious effect on the normal protective agencies of the gastrointestinal tract may more than offset any antiseptic effect that the drug may exert."- in Editorial of "AMA", 2 May 1908.

Dr W. L. Brown, in the Medical Press and Circular, of London, on "Intestinal Intoxications," says, that he believes that we shall ultimately be able to refer all the real intestinal intoxications to the presence of actively pathogenic bacteria among the ordinary saprophytes of the intestine.

He summarizes the points of treatment in a case of proved intestinal intoxication as follows:

1. A simple diet in which milk (reinforced with lactic acid if desirable) plays a large part.
2. Ordinary regulation of the bowels, without any drastic purgation.
3. Use of an intestinal antiseptic.
4. Attention to septic conditions of the mouth.
5. Identification of the microbe responsible and preparation of the appropriate vaccine.

In an article by Kahane in the "Enzyklopaedie der Practischen Medizin," Wein, 1905, he says:

> ***"The essential conception of autointoxication, meaning "self-poisoning", is the injury done by toxic products which arise in the organism itself in its life processes, especially those of metabolism."***

In way of treatment, he recommends stomach lavage, intestinal irrigation, administration of gastrointestinal antisepsis.

When excretory functions are low they must be stimulated; the skin with diaphoretics, the kidneys with diuretics, the bowels with cathartics.

In acid intoxications are recommended alkalies, sodium bicarbonate up to 100 grams (25 drams) in 24 hours, and energetic cathartics. In severe intermediary autointoxication venesection, and eventually intravenous injection of physiologic (0.6%) salt solution.

I have used phytolacca decandra alone before meals for intestinal antisepsis. I have also used a diuretic to relieve the system of accumulated toxins. Yogurt is a new antiseptic which has recently been exploited for intestinal autointoxication.

Metchnikoff, Tissier, Combe, Bourget, and others are interested in this form of treatment.

Leon S. Medalia, MD, in a paper read at the Massachusetts Dental Society, 10 June 1909, speaks of the colon vaccine as having given the most satisfactory results in cases of infection from autointoxication and from intestinal disorders when due to colon.

He says:

> ***"Here the autogenous vaccine, or the vaccine made from the patient's own culture has always given better results than the stock and seemed to be a necessary element in obtaining good results."***

If this is true in Pyorrhoea Alveolaris why should it not be worth trying in cases of mental disturbance caused by autointoxication of intestinal origin.

Paton says it is not rare to find mental disturbance in hepatic disease. Ballet has recently furnished a great variety of clinical pictures, those of particular importance being the states of somnolence and stupor that not infrequently develop during the terminal stage of hepatic disease. The milder cases show defective faculty of attention, the patient being unable to direct his energies persistently in one direction.

The attention is not diverted, but as the result of the lethargic condition it simply lapses.

In another group of cases where marked disturbances in the hepatic functions were noted, the patients were more or less excited and showed evidences of speech compulsion, psychomotor excitability, auditory and visual hallucinations, and more or less indefinite and unstable insane ideas.

The hepatic stupor or coma is far less apt than the uraemic or diabetic form to show evidence of remission, and a complete recovery seldom, if ever, occurs.

Dr J. M. T. Finney believes that the following conditions play an important part in the pathogenesis of the delirium:

1. An abnormal condition of the bile due to derangement of the hepatic functions.
2. A possible absorption of toxic products from the presence of bacteria.
3. A predisposition to nervous and mental disturbances, causing an increased susceptibility in the abnormal reactions for certain toxic products.

He also says that in the records of 100 operations upon the biliary passages the occurrence of a peculiar transitory delirium varying from a mild temporary aberration to a wild delirium had been noted in about 10% of the cases.

These mental disturbances develop during the course of convalescence after the bile passages have been drained, and often last but a fortnight (2 weeks).

Paton says, undoubtedly many of these symptoms referred to are the result of an intoxication due to the accumulation in the system of substances, the result of imperfect metabolism.

The toxic products that cause the symptoms may be derived from more than one source, and are either manufactured directly by the liver or absorbed from the intestinal tract.

He says:

> *"Regarding the disturbances in the gastro-intestinal tract and their relation to forms of alienation. That the former are frequently associated with various forms of mental disorders is a matter of common clinical experience."*

Von Wagner says that in certain forms of acute mental disease there was an autointoxication due to defective metabolism; and the same observer was able to demonstrate the increase in the urine of indican as well as of acetone.

In the case reported by Raimann the symptom-complex resembling Korsakow's syndrome was noted in a patient who died and in whom at autopsy were found multiple lympho-sarcomata of the small intestine.

A few other cases somewhat similar in character have been reported in the literature. That there is a marked defect in the functions of the stomach and intestines in very many cases of alienation is a matter of common clinical experience, as, for example, in cases of dementia praecox and manic-depressive insanity.

Moreover, milder forms of mental depression, such as hypochondriasis, are not uncommonly noted in connection with gastrointestinal disturbances.

The second group of mental disorders which are considered are designated acute and subacute, confusional and delirious states, in part the result of autointoxication.

These include the febrile deliria, the acute collapse delirium, the so-called amentia (Meynert), and Korsakow's syndrome.

Paton, in his chapter on the psychoses which are probably in part the result of an autointoxication, describes several forms, among others the so-called infectious or fever deliria, including all forms of mental aberration associated with febrile diseases and not forming an integral part of other psychoses. Second, the acute, or collapse delirium, and lastly the subacute delirious or confusional states.

Of the first he says:

> *"It is the general consensus of opinion that the pathological changes which occur in the central nervous system as the result of elevations of the bodily temperature are to be regarded as the results of autointoxications. In some cases of acute intoxication psychoses mitotic figures are demonstrable in the glia (glial cells). The gastro-intestinal disturbances of acute delirium are generally pronounced. Sometimes the nausea and vomiting are so obstinate that no food can be retained and a resort to artificial feeding becomes necessary. In other instances the refusal to take food is the result of delusions. The breath as a rule is fetid and constipation or diarrhoea is marked. The urine is often scanty, of high specific gravity, and, according to numerous observers, is very toxic in its qualities, The chlorides are frequently diminished, and certain investigators have found an increase in the quantity of indican and uric acid. At times there may be an unusual flow of saliva. The skin in the cases with a high temperature is dry, but in the asthenic types of the disease is moist and covered with a cold, clammy sweat. At least 50% of the patients succumb. One or more nurses must be in constant attendance, so that everything possible may be done to relieve the symptoms as speedily as possible. Although such patients frequently struggle furiously to get away from their attendants, trying to jump out of the window or to injure*

themselves in various ways, mechanical restraint should be resorted to until Hydrotherapeutic measures and all other means have failed. In practically all cases, if the warm continuous bath is properly given, being supplemented if necessary, by small doses of some hypnotic, it will have the desired effect. The bath should be given with great care. Every means should be employed to keep up the nutrition. Small quantities of milk should be given regularly every 2 hours, combined with raw eggs or bouillon. If the stomach rejects nourishment, nutritive enemate, 2 to 3 in 24 hours, are indicated. Sometimes high rectal injections of normal saline solution at body temperature are of great value in preventing collapse."

In a paper read in 1896, on "The Treatment of Melancholia," Allison says:

"If a patient can be made to think that he has some tangible foe to combat he will feel much relieved in mind. If he is told that his liver, his digestion and his intestinal functions are at fault, as they usually are, and that his mind is depressed by an impoverished circulation due to toxic agencies in his blood, he will feel that he has something to hope for in the way of eventual relief. Recurrent and periodic forms of melancholia are due to intestinal infection or auto-toxis. It is reasonable to subscribe also other forms of mental disease to this form of toxic infection. Melancholiacs as a rule, are reduced in weight and often emaciated. Evacuations from the bowels are scanty and frequently suppressed for days. Patient's appetite is often poor and the reason is frequently given as an excuse for constipation, that the patient eats nothing and a movement is not deemed necessary. Evacuations when they do take place are lumpy, light in colour and often extremely offensive."

He prescribes the Saratoga mineral waters and some of the stronger aperient waters; washing out the stomach and the drinking of hot water.

"The tendency of late years has been turned to the germ theory as productive of disease. These probably, with the septic products of active bacterial growth in the ill digested and decomposed contents of the intestinal canal, may be absorbed as toxic agents in the circulation and result in the various forms of melancholia."

Dr. Lewis C. Bruce, physician and H. DeMaine Alexander, assistant physician to the Perth District Asylum, Scotland, in an article on "The Treatment of Melancholia," published in the Lancet, 24 August 1901, says:

"We believe melancholia to be a disease of disordered metabolism and that treatment should be directed to increase the excretions of waste products of this metabolism through channels of the urinary and integumentary systems. We mechanically accomplish this

end by administering to our patients an abundant fluid dietary. By means of this treatment the blood gets rid of this overcharge of waste products. We assist digestion by giving milk frequently and in small quantities, as this is the most easily assimilated food."

They consider the forcing of solid food, upon a patient suffering from acute melancholia just as injudicious treatment as would be the feeding of a patient suffering from typhoid exclusively on beefsteak.

The insomnia in these cases is combated with paraldehyde.

The following are a few of my cases chosen at random from among those classified under autointoxication which have not before been published.

Case 1. 16 January 1904. F. A. E., aged 26, always neurotic and eating improper food at irregular intervals, became very excited and depressed as the result of the loss of a near relative.

Apparently does not want to live; makes attempts to jump out of the window; is sleeping 30 to 45 minutes at a time and awakes startled and frightened.

Laid the following note:

"To my family and friends: If I die do not mourn for me more than you must. I have done the best I could and am ready to leave my work unfinished, for I know there will always be more to do. I know you love me, and mourning cannot help me."

Gave laxative followed by antiseptics and nutrition every 2 hours in the form of liquid food; massage, and warm baths in the evening. 18 January, patient up and dressed and taking solid food with a relish. After this, patient gradually improved and under the constructive treatment with antiseptics, changed from a neurotic into a very calm and steady disposition. He married in 1908 and has a very healthy child and at the present writing has had no return of depression.

Case 2. Mrs. H. C. T., aged 67, 10 October 1904; had been subject to periodic attacks of depression for many years. Diagnosis: manic-depressive insanity.

These attacks started with irritation, excitement, emotion, insomnia and with loss of appetite. In a few weeks the emotional symptoms usually disappeared and she became very obstinate. She is now troubled because she has no emotion, no affection for her family, no religion. She is suicidal and says that the sight of scissors or a paper cutter suggests only one thing, the means of self-destruction.

She is often found gazing at a dagger paper cutter on the table or scrutinizing the windows. During the present attack she has felt like screaming at times and is on the verge of violence, and very agitated.

She complains of whistling sound in her head, and says:

"I cannot rest or get any peace. I am so sorry for my children and sisters. I feel I must scream. I feel that what you prescribe for me is a punishment, especially the hydrotherapeutic baths. I wish the Lord would call me home. I have lost my identity. I do not feel natural."

These attacks which first came once in a few years are now annual and for the last 2 years there has been some depression most of the time.

The analysis of the urine was made by Dr Wood, of Harvard. He found the indican increased; sp. gr. 1022; very acid reaction, with considerable sediment with granular hyalin casts; urea 1.47. In speech and action she is much retarded, and what sleep she gets is disturbed by horrible nightmares. She does not perspire; has a hot, dry skin; her breath is offensive; palpation shows a great deal of gas in the stomach and intestines. She has lost about 7 kg in weight. I prescribed high enemas of normal salt solution, 2 hours after each meal; salt baths of not less than one hour at night with full diet; massage. Gave orders to the nurse to interest patient and work with her in some hand occupation. The patient was soon occupied several hours a day knitting and crochetting. After the first week the patient gradually improved.

On 30 January 1905, she was enjoying her drives and her friends, and had gained 20 pounds in weight. In March 1905, she was enjoying herself in Atlantic City, living a perfectly normal life and later, after a summer in the mountains and other resorts, she went to Europe where she did as much sight seeing as anyone. Examination of her urine after the first 2 months showed no excess of indican and the urea was 1.39; sp. gr. 1020, and no casts.

In the year 1905, she had no return, which was the first year in a good many that she had been free from symptoms. In the spring of 1906 she was brought to me after she had become quite depressed and suffering from insomnia and had many of her other early symptoms. I immediately placed her on antiseptics, this time using glycothymolin, a dram three times a day in water and also 2 oz. to 500ml in the High Enemas.

She soon cleared up and went abroad and on 16 June, her son wrote me:

"Mother seems to be doing finely. I left her at Lugano with a most excellent appetite. She sleeps well and enjoys sightseeing."

In the spring of 1907 she began to sigh a good deal and show symptoms of depression and nervousness. I immediately started high enemas of two to three quarts of normal salt solution, gave her phosphate of sodium, a dram three times a day, and also Glyco-Thymolin.

In a week her nightmares were changed to pleasant dreams.

In 2 weeks I had discontinued the baths and enemas. She had no return until last year when she had about a week of depression; treatment being begun at once with most satisfactory results, and there has been no return since. She is now in the best of health, eats and sleeps well and enjoys her automobile and her travelling.

Case 3. 31 August 1905, Miss J. McC., aged 38. Called in consultation by Dr. Arthur L. Chute. For some weeks the patient has been unable to sleep at all nights; appetite very poor and hallucinations of sight and hearing and delusions of persecution. Hypnotics and tonics have been given her but her condition has been steadily growing more alarming. Prescribed laxative, high enema of salt solution and glyco-thymolin. This was followed by other intestinal antiseptics.

Dr. Chute's examination of her urine showed an increase of indican. In 5 days she had made a decided improvement in her mental condition and a full diet of fluids and semi-solids was prescribed. On 7 September 1905, she was allowed to go in town to get some glasses so she could read and occupation was prescribed. Her improvement was steady, and she was sent to her home in Novia Scotia a little later. On July 27, 1906, Dr. Chute writes, "The patient, J. McC., whom you saw last September, has wholly recovered and is soon to be married."

Case 4. January 31, 1908, Dr. F. W. E., aged 56, President of the State Medical Society of the State in which he resides. Has been a very successful but much overworked man, under tension a great deal of the time with his medical work. A year ago his condition was diagnosed as neurasthenia. He says he is growing steadily worse. He now has thoughts of death and decay continually running through his mind. He has uncontrollable emotional attacks and he feels he is serving a sentence; he also is suicidal, believes he should not be a burden to anyone. His tongue is coated; breath offensive, much gas in abdomen and stomach, retardation of ideas and speech; reflexes diminished; Romberg position only fair; temperature just above normal; pulse 84; very sleepy; tired all the time; lost 20 pounds in weight within a year.

Prescribed Colonic Flushings of saline solution, 3 times a day.

He returned home and later wrote that he was gaining some of the 20 pounds he lost and was feeling better.

Case 5. 1 July 1909, Miss M. S., aged 28, brought by her mother. Patient is extremely apprehensive, especially about her mother; has unpleasant dreams at night of people shooting her, etc., has hallucinations of hearing, but not of sight. She is positive she hears robbers in the house at night, that people are walking behind her, both in the house and on the street when she is really walking alone; sleeps but very little and 1 hour or 2 of rest she gets is the result of some powders she has been taking; weighs 98 pounds.

Her monthly flow or menstruation has been getting less and less.

Pupils are dilated and do not react to light, possibly due to the powders; she does not know what they contain. Has a violent temper; some vertigo, thyroids large and soft; eye-balls bulge to the point of prominence; has lost weight, and expression is entirely changed. Says she feels that the steps she hears behind her are people coming up to shoot her. Prescribed laxatives and Folsom's tonic (Oxygenated Syrup of Yellow Dock, Wahoo Wild Cherry and Sarsaparilla), Thyroid Extract.

Patient almost immediately began to improve and on 14 July said she had no more "peculiar dreams" and that she does not say strange things which she confesses she found herself saying. In August of the same year I sent patient for a rest and change to a delightful summer resort at North Sutton, New Hampshire.

She gained 4 kg while there, weighing 48 kg when she left. On 29 March 1910, patient writes:

"I know you will be pleased to hear that I am perfectly well and have been since October."

Up to the present time there has been no return of symptoms.

Summary

Auto or self-intoxication is recognized as the cause of many diseases and abnormal conditions of our bodies and as an important factor, if not the most frequent cause, of disturbances of the brain which result in mental disease.

The first duty of the physician is to prevent conditions which in his patients are liable to bring about a disturbed metabolism. With this end in view the family doctors throughout the land should study into this problem and avail themselves of every opportunity to become proficient as to the cause and prevention of mental disease.

They should not simply nurse along their mentally ill cases until they are obliged to commit them to some institution, but they should begin the most active treatment as soon as disturbed metabolism is evident, especially if accompanied by insomnia, confusion or depression.

If a patient has to be committed, the family physician should follow up the case, and treatment if given, to better enable him to intelligently combat other cases in his future practice or to avoid a similar condition in other members of the same family, due to environments and mode of life.

The treatment should always be vigorous and should consist of Colonic Flushings of 1 to 3 quarts of normal salt solution to which an antiseptic may be added and the whole retained as long as possible.

The patient should be put on liquid diet at first with plenty of buttermilk and then semi-solid and if improvement continues solids may soon be added.

Tonics before or immediately after meals and intestinal antiseptics between meals when indicated. Some nutrition easily assimilated should be taken on

retiring. Alkalines should be given to overcome acid conditions.

Prolonged baths for their quieting effect, especially in cases of motor excitement, and hot pack for purposes of elimination should be given.

Frequent analysis of urine, faeces and blood should be made, the result of which determines the course of treatment to pursue." - Dr L. Vernon Briggs, MD, Physician to the Mental Department, Boston Dispensary, in "Alienist and Neurologist", 1912.

Colonic Intoxication

"**Dr J. F. Binnie, MD, after a review of the embryology of the intestinal tract, avers that toxemia due to stasis is one of the commonest conditions met with by physicians.**

Ptosis of the transverse colon leads to contraction of the peritoneal attachments at the flexure, thus accentuating the kinks at these locations.

Wasting of the muscular coats follows, especially at the sigmoid flexure.

In cases of chronic colonic intoxication, there is abdominal distention, painful dragging in the abdomen and pelvis, tenderness and rigidity, frequently in the right iliac region, but lower than McBurney's point, and perhaps constipation, alternating frequently with diarrhoea.

In digestion, neurasthenia, dirty looking skin, especially at the body folds and eyes, and cold hands and feet are frequent symptoms.

Even very severe cases often respond to treatment as follows:

1. Strengthen the abdominal muscles by exercise.
2. Regulate the diet, avoiding foods which leave a large amount of material to be absorbed by the lower bowel, i.e., vegetable food; buttermilk being of great value.
3. Regulate the bowels by rectal flushing, and use laxatives by mouth if needed.
4. Use judicious abdominal massage.

If these measures fail after a thorough trial, surgery is required, and a great diversity of opinion prevails as to the best treatment, which ranges all the way from appendectomy to excision of the colon, the latter measure having given wonderful results in Lane's hands.

Ileocolostomy has proved its value by sidetracking the offending portion of the bowel, and cases of chronic rheumatism and tuberculous joints have readily cleared up and the patient has been restored to health by the operation." - in "New York Medical Journal", Vol.95, 1912.

The Management of Confusional States with Special Reference to Pathogenesis

"Confusional is a hall-mark of the effects of toxin upon the cerebrum. When very slight, special tests are required to elicit it.

1. Interference with neuronal conductivity is the chief pathogenetic factor. The topical incidence of this is one of the determinants of the form taken by the psychosis, whether hallucinatory, disorientative, depressive, delusional or what not.
2. Another factor is the state of the body secretions as affected by the toxins.
3. A third factor, is the patient's psychological status as determined by the capacity and the opportunity for experience.

Toxin may be exogenous, whether from living parasites or not, or endogenous, as from vascular stasis, malnutrition, exhaustion, endocrine disorders, or it may be dynamic, as when psychogenetic.

Bodily signs are usually present, such as reflex disturbances, tremor, circulatory disturbances and vegetative disorders. Headache and insomnia also almost always occur. Of the latter onirical delirium is usually a feature, it is a kind of somnambulism with partial amnesia. The perceptions are feeble and motor reactivities usually dull. That structural changes may occur when the cause of confusion is long maintained is manifest upon histological examination of the brain. But that these often permit of repair seems to be shown by apparently complete recoveries even after years.

The management of the patient consists of, firstly: the avoidance of adding the toxicosis of imperfectly elaborated protein, which is prone to occur even with a moderate diet because of cloudy swelling of hepatic cells induced by the causative toxin or by a similarly induced interference with renal elimination causing retention of nitrogenous substances.

Lack of proper adjustment of the diet, especially in the matter of carbohydrates, leads to an acidosis, which further aggravates the toxic state by interfering with proteoclysis as well as with proper catabolism.

The remedy for this is of course adequate ingestion of carbohydrate substance. The giving of alkalies after all has only a neutralizing effect, although it is necessary in some cases.

But the assistance to metabolism of the alkaline salts, especially in the combinations naturally occurring in most fruits and many vegetables, is invaluable; so that these should be copiously added to the diet.

Of course, sufficient water should be given.

Violence, distress, or agitation should never be met by narcotics, which merely increase cerebral toxicity.

These symptoms arc quickly mitigated by hydrotherapy until the full effect of metabolic improvement from proper diet can show itself upon them.

Some of the cases following illustrate both the symptomatology of management of confusional states of different etiology.

Case I: The first of these illustrates a post infectious toxic state in an individual predisposed by sclerotic blood vessels, feeble heart and a lack of constitutional robustness as well as previous over-indulgence in alcohol.

The toxic confusion was maintained and aggravated by the ingestion of pharmaceuticals and an excess of protein.

Recovery was accomplished by means of the afore-mentioned principles after several consultants had failed to benefit the patient.

Post-Influenzal Confusion With Exhaustion: In May, 1915, a judge, aged 64, after a severe attack of influenza, remained very confused in mind, and began to develop hallucinations and delusions of a vague character. Several consultants were seen without result, and he became weaker and less clear mentally. When I examined the patient was in a typical condition of mental confusion.

There was a large quantity of indican and a slight trace of albumen.

I considered this a case of acute exhaustion psychosis, partly toxic in character. The treatment prescribed was embodied in the following report to his physician.

As the patient is suffering from exhaustion, stimulants are contra-indicated, as the tired organ is incapable of further response to them; therefore, I think it wise to omit caffeine, the secondary effects of which increase the exhaustion.

Strychnine should not be further given either, for it merely increases the discharge that is the exhaustion of energy of medullary neurones.

Sparteine is a nerve-muscle poison, the effect of which in improving cardiac activity can not be maintained for long without greater nutritional capacity than the patient possesses.

Nor should I give the bromides during the effort to build up the patient, as they diminish metabolic processes and lower resistance. Ammonia should be kept for emergencies only, as its effect is evanescent.

Water should be the drink, and should be given about one hour before each meal, but should not be restricted to that time if the patient desires it at any other.

The adrenal principle should be continued. If the patient suffers from the heat, cool sponging should be beneficial; and in any case its effect upon the innervation of the vascular system is usually most beneficial; the water should be used lukewarm.

When these measures were carried out, improvement was rapid; so that in four weeks the patient was able to be about, and the following term took his place on the bench, and remains well at this time.

Endogenous Sources of confusional states are most clearly seen in hypopituitarism as the following case shows:

Case V. Narcoiepsy from Hypopituitarism: A clear cut example of the confusional state of pituitary insufficiency is that of the girl of 25 she had been sent on account of the pains in the back and dragging feeling and tenderness in the

legs, in the belief that she had sciatica. There were absent-mindedness, severe amnesia, dull, heavy headache, which was sometimes bursting and was located deep and low in the middle of the head. Torpor would occur often suddenly, even causing her to fall. The mental confusion was most marked in these attacks, in which she felt as if intoxicated, singing and speaking absurdities. Although there was no vertigo, lines would blur when reading.

Psychic disturbances such as a powerful emotion may cause temporary confusion; but it is doubtful if this can be prolonged in the absence of secondary somatic factors, such as impaired metabolism, circulation, and internal secretions.

Chronic Confusion

That a great many cases of chronic mental alienation supposed to be idiopathic are in reality toxicogenetic is becoming clear. Most significant is the autopsy material of the Massachusetts State Hospitals, in which every case of 100 carefully studied showed kidney lesions.

When confusion becomes chronic, internment is usually imposed, often with a diagnosis of dementia praecox, which is regarded by Regis as merely the chronic form of the mental confusion of Chaslin.

From Kraepelin's rubric, Regis excludes cases of constitutional origin, usually the hebephrenics (schizophrenia), which undergo rapid involution at puberty.

The others, he maintains, begin with an acute attack of mental confusion due to toxin, usually show catatonia, and often end in dementia.

Otherwise, there is a gradual failure with delusional formation inversely proportional to the rapidity of the dementia, and, finally, a permanent defect.

The recovery of some of these cases, even after long periods, is in harmony with the conception of Regis that a factor outside the cerebrum itself is at work.

This is in no way antagonistic to the finding of lesions in the brain itself by Southard, for we know that toxin can produce neuronal damage.

A most remarkable recovery of a confusional state of 17 years duration was recently reported by a Pennsylvania psychiatrist.

Case VIII. I have reported an example of recurrent maniacal confusion of toxic causation, which was completely removed when we prevented the autotoxemia of excessive eating, which at each alternate menstrual period produced an acute confusional attack, with rise of temperature, leucocytosis as high as 30,000, lasting for 10 days or so, and never leaving the patient quite normal in the intervals. (NY Med. Jour., Diet in Nervous Disorders, 1911)

Case IX. Marked Confusion Due to Metabolic Migraine Resembling Petitmal: A bacteriologist aged 30, was referred to the writer in the spring of 1912, by Dr Paul Johnson, because of attacks so-called "bilious" (but not preceded or accompanied

by constipation), which produce headache, preceded by numbness and prickling in the fingers, followed by dizziness, mental confusion, and foolish talk of paraphasic type, without loss of consciousness. These attacks had occurred every 2 or 3 months since the age of 22; they were of very short duration; they were formerly accompanied by vomiting.

The headache was of the splitting kind, lasted all day, and was followed by dullness and slowness of thought the day following. The capacity to concentrate his thoughts was increasingly impaired even between the attacks. He was at times irritable. He had no bad habits, and, apart from these attacks, he was well and strong. He received a blow on the left side of the head as a boy, and there was still a dent in the left parietal region, upon which side the headache more often occurred. He had a large appetite, which he said he controlled, but he ate meat thrice a day, although, he said, sparingly.

Treatment and Progress

He was given the low protein "standard" diet.

He wrote the writer the following winter:

"Since I have reduced the amount of protein in my diet and increased the quantity of vegetables, I have had no recurrence of those spells."

Dr. Johnson informed the writer that he remained well to date, 5 years later.

Therapeutic Summary

The treatment of confusional states should be easily gathered from the foregoing. Dietary and effort at elimination. When the internal secretions are disordered, it is to these that attention must be directed.

Physiological irritability must be counteracted, not by depressants or narcotics nor by forcible restraint, but by hydrotherapy, fresh air, and non-stimulating food. Even in patients violently disturbed the death-rate where narcotics are used is much greater than when physiotherapy is employed alone.

Gregg says, in recounting their experience at the Boston Psychopathic Hospital:

"The result of the eliminative treatment of the deliria with relative freedom and Hydrotherapy, and a minimum amount of medication, far excels in effectiveness the usual treatment by restraint and depressant drugs in cases of the symptomatic psychoses, including alcoholism. Every general hospital should be provided with the facilities for treating properly cases of delirium. Such facilities should include isolation wards where quiet is not essential, and continuous bath apparatus for Hydrotherapy."

Very striking is the difference in the death-rate among 50 cases of delirium tremens in 5 general hospitals, comprising 50 cases from different hospitals in New York, Philadelphia, Baltimore and Boston.

These were treated by depressants and showed a mortality of 26%, while 50 cases from the Boston Psychopathic Hospital were without mortality, in spite of the fact that they were older and more complicated.

In the acute and grave cases measures may be required.

Such are: Rectal Irrigations, saline injections, intravenously or per rectum, but these with caution." - Dr Tom A. Williams, MB, CM, Edin. Washington, DC in "Alienist and Neurology", 1918.

Toxaemia Effect on Eyesight

"**There are many causes which help towards this premature senility, but the factor common to a very large majority of them is intestinal stasis.**

On the other hand, those whose accommodative power is higher than normal look much younger than their years, and in every way are younger, and on going into their history it will be found invariably that they have taken the greatest care to avoid the least suspicion of intestinal stasis.

These facts, in connexion with the premature senility of the lens, are another proof of the correctness of the old saying that "a man is as old as his arteries"; the premature sclerosing of the vessels often taking place at the same time as the process in the lens.

I have given above an example of 2 individuals of the same age with a wide difference of accommodative power; as an example of two individuals with a wide difference of age and the same accommodative power the following is perhaps more remarkable:

To show how short a time is required to induce premature senility by intestinal stasis, I cite a man who 2 years ago, aged then 48, had 5.D. accommodative power.

In the interval he has suffered very badly with intestinal stasis, which he has very often not troubled to overcome (he had never heard of petroleum oil).

His accommodative power is now only just over 2D.

He has lost more than half his accommodative power in 2 years. There was no other cause ascertainable except the intestinal one to account for his ageing 10 years in 2 years.

I could cite many other cases where the onset of intestinal stasis was apparently the only symptom or condition which existed to account for the premature sclerosis of the lens, accompanied by premature senility in other parts of the body.

One more case I should like to cite, which bears out incidentally Dr. Hertz's statement that a daily evacuation of the bowels is no proof of the absence of intestinal stasis.

A man, aged 48, with an accommodative power below the normal, who had no

suspicion that he was suffering from constipation, had appendicitis.

Mr. Lane operated and found a very bad state, pointing to many years of habitual stasis.

On his recovery he was made to attend most carefully to the bowels.

The result is that now, after some years, his accommodative power is 3 years above the average, and he looks and is a much younger man than his years.

This case also shows that by treatment we can give back a patient some of his lost youth by arresting the senile process in the lens and often in other parts of the body.

I think I have said enough to prove that premature hardening of the lens is a very constant sequela of intestinal stasis, that this is a very useful and easily ascertained index, and that accompanying this process premature senile changes are occurring in other tissues of the body which may often be unrecognizable for some time, and that removal of the intestinal stasis tends to an arrest of the sclerosing processes.

An ounce of fact is worth pounds of theory, and I hope these facts will be useful in this important discussion.

The causal relation between Intestinal Toxaemia and various diseases of the eye, notably Iritis and Cyclitis, more often than not associated with Pyorrhoea, has been discussed by others, and **I need only add that 30 years experience in the out-patient department of a large hospital have taught me the paramount importance of obtaining a clean mouth and tongue and emptying the bowels as the first part of the treatment of all eye diseases.**

I cannot close these brief remarks without adding my personal conviction that humanity will owe an enormous debt of gratitude to Mr. Arbuthnot Lane for his persistent and obstinate insistence on the paramount importance of effectually treating and removing intestinal stasis." - Dr Ernest Clarke, MD in "Proceedings of The Royal Society of Medicine", 1913.

Treatment of Acute Intestinal Intoxication Bases Upon Clinical Findings in the Colon

"During the period of 10 years that I have used this method for acidosis I have treated over a thousand adults and children without a death.

Until several years ago it was not generally known to the profession that certain measures of treatment were contraindicated in acute intra-abdominal inflammations.

Warning on Acidosis Treatment

Use Small Enema Only

It has not been recognized that laxatives, cathartics or large enemas administered to patients with acidosis may increase the severity of their symptoms to such an extent that they suddenly develop convulsions or coma or die from an overdose of virulent colonic toxins.

Furthermore, they should know the reason why a Laxative, a Cathartic or **a Large Enema will Increase Acidosis, and why Small Enemas will relieve it**.

The following outlined treatment for acidosis has taught me these reasons:

Method of Treatment

During the first 24 hours

Six small Enemas are given in series of twos. One half hour is allowed to elapse between each enema and 4 hours between each series.

During the second 24 hours

Four small Enemas are given in series of twos. One half hour is allowed to elapse between each enema and 12 hours between each series.

During the third 24 hours

Two small Enemas are given. 12 hours are allowed to elapse between each enema.

All enemas are composed of weak soapy water. Not over 250ml to a child or 500ml to an adult are given at one time.

The elevation of the fountain syringe should not exceed 12 inches.

Diet

Diet during the first 24 hours: 2 ounces of orange juice to a child; 4 ounces to an adult are given every 3 hours. Water is given frequently in small quantities.

During the 2nd and 3rd 24 hours: A non-fatty broth and a small piece of dry toast are alternated with orange juice. Water is given frequently in larger quantities.

Patients are not allowed a normal diet until their urine is free from acetone.

Contraindicated measures of treatment are laxatives, cathartics and large enemas.

Contraindicated foods during the treatment are: milk, solid foods and fatty broths. The clinical response obtained from this method is prompt. The fever disappears in a few hours. The urine is free from acetone usually in 72 hours.

The prognosis is excellent. Convulsions or coma do not occur.

Death is unknown. It was found that those who had not been given contraindicated treatment were fully recovered and on a normal diet within 3 days, while those who had received contraindicated treatment could not be given a normal diet until 6 or 7 days.

For several years I have viewed the body of a well nourished child aged 1 or 2 years, a few minutes after its death. The history of these children's illnesses was the clinical history of acidosis. The wet diapers that were removed from their bodies always showed a pronounced acetonic reaction.

All died suddenly after a convulsion. All had been given a laxative, a cathartic, or a large enema 6 or 8 hours before their convulsion. Their temperatures per axilla registered 102° to 103°.

Fifty other children with a clinical history of acidosis, ages 1 to 3, gave the same pre-convulsion history of their illness and treatment, but they recovered.

The wet diapers that were removed from their bodies also showed a pronounced acetone reaction. Their temperatures per axilla registered 103° to 104°, 6 or 7 days elapsed before they could be given a normal diet.

On the one hand, my clinical experience with acidosis has taught me that contraindicated treatment often produces convulsions and occasionally it produces a sudden death; especially has this been true in children who were less than 3 years of age. On the other hand, it has taught me that the treatment outlined resulted in no untoward symptom.

The patient always recovered. The convalescence was reduced 50%.

It seems probable to me that medical authority will agree with me when I say that it is impossible to determine the true cause of a condition or a disease if major clinical findings of that condition or disease are deleted.

The following specific reasons lead me to believe that certain major clinical findings in acidosis have never been considered as being related (directly or indirectly) to its cause:

1. Uniform findings by examination of the wet diapers that were removed from the bodies of certain young children shortly after their death inform me that contraindicated treatment is the cause of many thousand sudden deaths that occur each year in well-nourished children.

2. Clinical findings that were elicited by examinations of the abdomens of over a thousand children and adults during a sudden attack of acidosis revealed the presence of impacted faeces and pocketed gas in their colons.

3. The prompt therapeutic responses that were obtained in all these cases by the removal of impacted faeces and pocket gas verified these diagnostic findings.

4. All adult colons that were x-rayed several days after an attack of acidosis showed an incompetent ileocecal valve and atonic or hypertonic areas in their colons. These same adults at the time their colons were x-rayed showed a slight constant acetonuria. The acetone disappeared from their urine and an x-ray of the caecum showed a competent ileocecal valve when the colonic stasis (which was due to a non-uniform muscle tone) was relieved.

5. Lastly, such local toxic manifestations as spasmodic croup, an eczema that is not due to irritants (locally applied), a nosebleed that is not caused by local accident or a high blood pressure, uterine bleeding that is not the result of fibroids; an arthritis, herpes zoster, or bronchial asthma that is not due to a toxemia from the ordinary focal infections, seem to me to be caused by the absorption of colonic toxins from the small intestine, because treatment that is based upon clinical and x-ray findings in the colon promptly and effectively relieves these toxic manifestations, while treatment that is not based upon a temporary or constant colonic stasis is unsuccessful.

What is acidosis?

Acidosis is a general toxic manifestation of the absorption of virulent colonic toxins from the small intestine.

The symptoms that have been ascribed to it are the symptoms of acute intestinal intoxication.

These are a sudden fever, rapid pulse, sometimes air hunger, a proneness to be suddenly tired and drowsy, a dry nose and throat, and an acetone breath.

Acute intestinal intoxication has no fatal complications when its cause and the indicated and contraindicated measures for its treatment are known.

Its differential finding is a pronounced acetonuria. Its clinical findings are dullness and tympany on percussion over the colon.

Its contributory causes are:

1. Impacted faeces and pocketed gas in the colon.
2. An incompetent ileocecal valve.

Toxins that are absorbed from any portion of the body weaken all muscles and that the degree of weakness depends upon the degree of toxicity, the rate of absorption, the amount, and whether the toxins are absorbed temporarily or constantly.

Acetone in the urine is also the differential finding of chronic intestinal toxemia, i.e., intestinal auto-intoxication, because acetone is present in all cases showing an incompetent ileocecal valve by x-ray and it disappears when the cause of the incompetency, i.e., stasis in the colon, is removed.

The small intestine becomes contaminated if the ileocecal valve is incompetent and if the valve be made competent by removing colonic stasis and strengthening the musculature by graduated exercise, the contamination will be eliminated. I have tried this method of treatment for intestinal auto-intoxication for the past seven years and from the uniform responses that were obtained a slight persistent acetonuria means an incompetent ileocecal valve.

Is the acidosis that is found in children and adults who are not diabetics due to the same cause as the acidosis that is found in diabetics?

Yes, I have found that acidosis is prone to complicate all disease, serious injuries, anesthesia, or a diet that is constantly low in carbohydrates. It seems reasonable to me that it would do this because a normal muscular valve that is composed of normal muscle fibres can be stretched to such an extent that it becomes incompetent.

Prolonged stretching of muscles produces loss of function. If the function of the ileocecal valve were lost temporarily, it would mean that colonic toxins would be absorbed from the small intestine until the causes that produced its loss of function were removed.

If an ulcer perforates the wall of the intestine, the physician advises that the damage be repaired; if the ileocecal valve becomes incompetent because of a fecal stasis, he removes the fecal stasis in such a manner that additional toxins may not be forced or washed into the small intestine.

Clinical experience obtained by treating acidosis and intestinal auto-intoxication has taught me that pocketed gas in the colon is sufficient cause to produce an incompetent ileocecal valve.

What proof is there that will verify the diagnosis of a disease better than a treatment that will cause all the symptoms of the disease to disappear, reduce convalescence and, at the same time, prevent the serious complications and an occasional death that resulted because contraindicated measures of treatment for the disease were employed?

The treatment of a pronounced acetonuria in any patient upon its contributory causes, namely: impacted faeces, pocketed gas in the colon and an incompetent ileocecal valve?

Is it unreasonable to think that many knotty therapeutic problems that confront the medical profession will be solved when physicians know the complications that are prone to occur when the ileocecal valve ceases to be an effective barrier between the sewer and the absorbing systems of the body?

The outlined method has been more successful in my practice than any other, and believing that it might give physicians a clue to the diagnosis and treatment of two diseases of considerable importance, namely, acute and chronic intestinal intoxication, I should like them to try it.

Furthermore, finding no record in medical literature that the absorption of virulent colonic toxins from the small intestine can produce convulsions or cause the sudden death of a young child; that a pronounced acetonuria differentiates this disease from all others; that there are contraindications to the treatment of it; that intestinal intoxication can be accurately diagnosed by testing the urine and further intestinal absorption can be prevented by establishing a uniform muscle tone in the colon musculature, is it unreasonable to suggest that mothers can prevent the deaths of many thousand young children as soon as they are informed that certain measures of treatment for a sudden fever are contraindicated?

Or is it inappropriate for me to ask to whom but the medical profession are mothers to look for this information?

If the physician realized that absorption of colonic toxins takes place in the small intestine rather than in the colon, although all the objective findings are in the colon, he would avoid any form of treatment that might force more toxins into the ileum. If he realized that stretching the colon by pocketed gas results in permanent weakening of the musculature, he would know that the problem resolves itself into strengthening the musculature.

The only rational treatment, then, is one directed toward strengthening the distended colon. It requires no exaggerated imagination to determine what might happen to a dilated appendix that is attached to a dilated caecum if its musculature were too weak to expel material that dropped into it; or what might happen to an organ in the abdominal or pelvic cavities if the musculature that supported it lost its function of contraction. If it takes three days of careful supervision to induce a normal muscular valve to resume its former strength and vigour after a few hours of direct absorption of virulent colonic toxins from the small intestine, is it not a probable supposition that these toxins have serious effects upon all muscles of the body?

Furthermore, if the absorption of virulent colonic toxin can cause the death of a child in less than 6 hours, may not the constant absorption of less virulent colonic toxins in adults reduce their pulse pressures, cause a ptosis of organs, headache, susceptibility to fatigue, interfere with vision, or produce such local toxic manifestations as spasmodic croup, eczema, bronchial asthma, herpes zoster, arthritis, uterine bleeding or flat feet?

The colons of four hundred adults who showed chronic intestinal intoxication, by presenting one or more of the above symptoms and the differential finding, a slight persistent acetonuria, were x-rayed. Every colon showed a muscle stasis and an incompetent ileocecal valve.

These are my findings, interpretations and conclusions. Upon them I base the diagnosis, indications and contraindications of the treatment of acute intestinal intoxication. I would treat acute intestinal intoxication rather than acidosis because I believe it is the cause of the symptoms that have been ascribed to acidosis.

Conclusions

Convulsions or sudden deaths of young children with acidosis have occurred; the contributory cause of acidosis is recognized as being due to a faecal stasis in the colon; treatment is directed toward removing this cause.

General and local toxic manifestations of the absorption of colonic toxins from the small intestine will be promptly recognized when the medical profession learns that acetonuria is the finding that differentiates an incompetent from a competent ileocecal valve.

It is my opinion that acidosis is due to the absorption of virulent colon toxins from the small intestine; other toxic manifestations of this absorption subside promptly when treatment is directed to the colon.

My 12 years of experience with it lead me to believe that they will be delighted to witness such prompt and startling recovery from a disease or a condition, and furthermore, after they have seen these results a few times, impacted faeces and pocketed gas must be removed carefully from the distal towards the proximal end of the colon by small enemas, never from the proximal towards the distal end of the colon by cathartics or laxatives.

The outlined therapy and diet give prompt relief to those who have undergone contraindicated treatment.

A treatment for a disease or condition that has prevented complications and death and has reduced the convalescence of many patients seems to me to be a therapy that the medical profession should know about." - Dr Lawrence P. Crawford, MD in "New England Journal of Medicine", 17 September 1931.

Colonic Toxins

The effects of Toxins in the system, in the production of some causes of disease.

In conjunction with Functional Inflammation, toxins from the colon, produce other toxins in the body that cause distress to the system, specially when the body is affected by any sudden change of temperature in the body, externally, when any draft, cold, over heating, or any condition that reduces suddenly the capillary circulation, there becomes a centralized condition of the toxins in portions of a body, either muscular or tissue, in extremities or in torso.

These bring those distresses called:

1. Rheumatism.
2. Neuritis.
3. Nephritis, or any Inflammation of Tissue or of Muscular Condition.

This is the effect of toxins congested, or poor eliminations produced by a weakened condition from the 2 conditions as produced (functional and organic).

Relation of Intestinal Toxemia to Chronic Arthritis and its Treatment

"Modern progress in medical science, both from clinical and laboratory research, has made such terms as:

Rheumatism, Neurasthenia, Nervous Prostration, Constipation, etc., entirely unsatisfactory.

Formerly all neurasthenics received bromides or other nerve sedatives, and the rest cure, but now **we consider Neurasthenia as a symptom of some Organic Disturbance, such as: Arteriosclerosis, Myocarditis, Autointoxication, Incipient Tuberculosis, etc.**

(Swan and Sutter in "The Organic Basis of Neurasthenia", New York Medical Journal, 21 January 1911. William Browning in "Is There Such a Disease as Neurasthenia? A Discussion and Classification of the Many Conditions that Appear to Be Grouped under That Head", New York State Journal of Medicine, January 1911)

It is not sufficient to prescribe laxatives in constipation, but we must search out a cause for the constipation and remove it. By so doing many times we will not need laxatives. Formerly we described a group of conditions as rheumatism, but as we learn more, we separate it into different types and give definite names.

Arthritis deformans is not the name of a disease, but of one of these clinical groups, which includes cases of deforming inflammations of the joints.

That the pathological and clinical features of these types are definite and constant is evident. Some of these types appear to be chemical in nature, for example, hypertrophic and gouty, and others bacterial, for example, infectious and atrophic.

The bacterial types are secondary to some focus of infection elsewhere in the body; tonsils, genitourinary tract, etc.

In such cases, to cure the disease one must find the primary focus and treat it before he can expect to cure the joint condition. So with the types that are chemical in character. Many of the cases of arthritis deformans are due to absorption of poisonous products from the gastrointestinal tract. This condition has been based upon a close study of these cases.

It was found in some that relief of the joint symptoms followed special diets, laxatives, intestinal antiseptics, lavage, etc.

Chronic Arthritis

The removal of intestinal toxemia has been followed by cure or the symptoms have been relieved.

Relation of the Joints to the Gastrointestinal Tract

Many clinicians have recognized an obscure relationship between disorders of the digestive tract and joint affections.

The following diseases show such a relationship:

Bacillary dysentery

Inflammation of articulations and tendon sheaths has occurred in bacillary dysentery.

Sydenham (Osler in "Modern Medicine") noted that dysentery was sometimes associated with rheumatic pain, and in certain epidemics joint swellings have been especially prevalent. A. E. Garrod (Allbutt's System of Medicine, III, 1908) says from 3% to 4%, of cases of dysentery are complicated by joint disturbances.

Appendicitis

G. A. Sutherland (Edinburgh Hospital Reports, 1895) has been able to collect only 6 cases of appendicitis in which there have been pronounced arthritic pains, and these seem to be too few to indicate any real relationship, too few to seem more than mere coincidences (H. W. Marshall in "Arthritis of Gastrointestinal Origin, Its Diagnosis and Treatment", JAMA, 26 November 1910).

Amebiasis

W. E. Musgrave in "Philippine Journal of Science, I, 5, 1906", records that chronic rheumatism, both of the articular and muscular types, is very frequently encountered, and in many instances seems to bear a definite relation to amebiasis of the intestines. Anders (Osler in "Modern Medicine") says rheumatoid pains in the joints are observed in amebic dysentery.

Colostomies performed for various rectal conditions reported by different surgeons (Edward John Cave in "A Discussion on the Chronic Diseases Included in the Terms "Chronic Rheumatism", "Osteoarthritis", "Rheumatic Gout", British Medical Journal, 12 October 1901. Frederick Charles Wallis in "The Cause and Treatment of Nonmalignant Stricture of the Rectum", Ibidem, 6 October 1900) have been associated with cures of coexisting arthritis. This has been explained by H. W. Marshall in "Arthritis of Gastrointestinal Origin, Its Diagnosis and Treatment", JAMA, 26 November 1910, that, as a result of rest, while the surgical conditions were being cured, the absorptive function of the intestines was less active.

Marshall also reports a case of colostomy for rectal ulceration in which the patient could tell when washings were needed by the pains that began in his joints. **They always subsided with the washings.** The following case is also interesting in this connection.

Case I. Male, aged 56 years, there had been numerous arthritic; attacks during the past 10 years which he thought were due to a "sour stomach". These attacks were accompanied by very marked headache and belching.

At that time he got in the habit of making himself vomit by putting his finger down his throat and this act usually relieved the headache. His joints began to swell 3 or 4 years after these attacks of gastric disturbance began during the time that the arthritis was developing, the gastric attacks would be followed by acute exacerbations of the joint trouble.

These exacerbations were characterized by more stiffness, acute pain on motion, and more swelling. During the period up to about one year and a half before admission to The Glen Springs the patient would empty his stomach 2 or 3 times a day on the theory that it would improve his joint symptoms, and for a long time he took large quantities of sodium bicarbonate.

His bowels were regular, although the stools were constipated. Eight of the examinations of urine during the past year showed indicanuria.

Colonic irrigations, which were started 10 June 1911, seemed entirely to relieve the pain in the joints for a period of about 18 hours. The patient said the pain let up in 30 minutes to 1 hour after the irrigation and did not return until late the following morning. The patient instead of being bedridden could now be about and had danced and played golf.

Goldthwait and Brown in "The Cause of Gastroptosis and Enteroptosis, with Their Possible Importance as a Causative Factor in the Rheumatoid Diseases",

Boston Medical and Surgical Journal, 26 May 1910, describe 2 cases in which the colon could not be properly drained by cathartics or lavage where this seemed to be the primary source of the diseased condition.

Colotomy was performed by Dr. Hugh Cabot with entire relief of the symptoms in one case and with partial relief in the other.

In another case in which a colotomy was performed for the proper drainage of the colon, faecal matter was found caked on the wall of the bowel in pockets so that it finally had to be scraped off.

Putrefactive changes went on under the faecal mass and led to ulceration.

In this case, which was operated in, there was a distinct ulcerative colitis, from which the absorption was taking place, causing the joint symptoms. The colotomy was performed in order to relieve the ulcerative features so that the absorption could be checked.

Disturbances in the Abdomen which might Lead to and Increased Production of Toxines and Ultimately to a Chronic Arthritis

1. Ptosis and dilatation of the stomach: The pylorus and the first portion of the duodenum have very little mobility so that in any dilatation or ptosis of the stomach, the greater curvature will be considerably below the outlet of the organ. The drainage, therefore, is very poor and the gastric contents are retained. Fermentation goes on and after some time the walls of the organ weaken from loss of tone of the muscles. More sagging occurs and with it less power of the stomach to empty itself. There may also be added a kinking of the duodenum at the junction of the movable and fixed portions. The stretching of the stomach leads to atrophy of the mucous membrane and this in turn results in lessened secretion of hydrochloric acid and pepsin. Lavage or cathartic relieves the symptoms of retention.

Goldthwait and Brown in "The Cause of Gastroptosis and Enteroptosis, with Their Possible Importance as a Causative Factor in the Rheumatoid Diseases", Boston Medical and Surgical Journal, 26 May 1910; explain how such a ptosis will make pressure on the transverse portion of the duodenum, or, through its relation with the superior mesenteric artery, make pressure upon the duodenum and increase its obstruction. Pressure against the pancreas sometimes causes atrophy of the pancreas (J. E. Draper Maury, JAMA, 1 January 1910) and pressure on the portal vein may cause decreased function of the liver.

2. Ptosis of the small intestines: Ptosis of the small intestines rarely exists alone, but usually in connection with ptosis of other organs. In ptosis the mesentery is stretched, which causes an elongation of the superior mesenteric artery with a coexisting diminution in its lumen. This interferes with the blood supply and later with the secretions in the intestines. Intestinal digestion will be interfered with on this account and also because of lessened tone of the intestinal

wall. Because of the increased mobility of the intestines there is greater chance of obstruction, volvulus, etc.

3. Ptosis of the ascending and the descending colon: Ptosis is rather frequent, especially in cases in which there is a mesocolon. Treves states that we may expect a mesocolon on the left side in 36%, of all cases and on the right side in 26%, of all cases. With the ptosis there is usually kinking, telescoping, etc. It is evident that, with, such conditions present, there would exist very definite mechanical reasons for the irregular evacuation of the bowels. Abnormal pockets may exist from which it is hard to express the contents. The loose or collapsed folds may form valves to interfere with the continuity of the lumen, while the irritation which might result from a distinct kink of the bowel would easily explain some of the irritation or ulcerated conditions met with.

4. Ptosis of the caecum: Ptosis of the caecum sometimes occurs. The caecum may undergo exaggerated descensus, dropping well over the brim of the pelvis into Douglas's cul-de-sac. Unquestionably some of the exaggerated cases not only give rise to chronic appendicitis, but maintain caecal and iliac peristalsis with considerable pain, even after the appendix is removed. A very flabby caecum falling into the pelvis may be the cause of considerable disturbance in the discharge of faecal material from the ileum into the caecum.

5. Ptosis of the transverse colon: The transverse colon lies normally in a nearly horizontal position in the upper abdomen and is suspended by its hepatic and splenic flexures from the liver and the spleen and by the transverse mesocolon from the stomach and the posterior abdominal wall. The stomach lies immediately above the colon, so that a ptosis or dilatation of the stomach might readily cause a displacement downward of the transverse colon. Ptosis of the colon may also occur without ptosis of the stomach. No portion of the colon is subjected to greater variation of position than the transverse. It is indeed so variable that we may even doubt whether there is a normal situation and length. A marked redundancy is frequently found. Cases of this kind have been described in which the colon reached the pelvic brim, and in one of John G. Clark (The Surgical Consideration of Congenital and Developmental Defects Leading to Obstinate Constipation, Ibidem, IV, 6 August 1910) cases it was found in a crumpled mass in the pelvis. In the latter case, 18 inches had to be resected to permit the transverse colon to maintain a normal position. If the flexures are in position and there is a marked ptosis, the contents of the colon, which are usually solid, must pass in an upward direction to reach the splenic flexure. The greater the degree of ptosis, the greater, naturally, will be the mechanical difficulties. Added to this upward course of the intestinal contents there might be a kinking at the splenic flexure, so that it becomes nearly impossible for the gut to empty itself. The bowel becomes distended and flabby and incapable of performing its functions. The slowing of the current affords ample time for bacteria to grow. Fermentation and putrefaction

of the contents now take place with the production of toxines. The absorptive power is increased, and the toxines are carried to other parts of the body and cause some of the chronic disturbances to which such patients are heir. Many cases of chronic constipation may be accounted for by such alteration in the position of the colon. Cases occur at times with marked ptosis of the transverse colon without disturbances of the health, so the degree of ptosis docs not determine the amount of disturbance which will result. Obstructions of the colon may occur from adhesions around the gallbladder. I have in mind several patients with intestinal toxemia who have histories of previous attacks of cholecystitis.

6. The sigmoid: The sigmoid has been the seat of much trouble. In the Berliner klinische wochensckrift, 27 June 1910, Augsbach, a Russian, says that the statistics seem to show that abnormal positions of the sigmoid are the most frequent points of trouble, particularly volvulus. The sigmoid is quite frequently redundant, sometimes as long as 61 cm. This is often an occurrence with ptosis and such patients usually suffer from obstinate constipation. Strong laxatives are necessary at first and after a time drastic purgatives.

Here again is an important point for the development of bacteria with resulting fermentation and putrefaction and the absorption of the toxines produced.

7. Abdominal Wall and posture: During youth and early adult life the intra-abdominal pressure is perfectly maintained by the tonicity of the abdominal musculature. A latent enteroptosis may be present, but it is not symptomatic, because the redundant colon is held in such a position that the lumen is not interfered with. As a result of birth or wasting diseases the tonicity of the abdominal musculature is replaced by a hypotonicity with consequent diminution of the intra-abdominal pressure permitting a sagging of the intestines with the formation of kinks at the junction of the movable and fixed portions. If emaciation is present the degree of ptosis will be aided by the removal of the normal buttresses of the organs (fat).

While faulty posture, as pointed out by Goldthwait and Brown (The Cause of Gastroptosis and Enteroptosis, with Their Possible Importance as a Causative Factor in the Rheumatoid Diseases, Boston Medical and Surgical Journal, 26 May 1910), may have the same effect in addition to the removal of the normal buttresses of the organs. I am inclined to the view that posture and the characteristic body form in most of these individuals may be the direct result of faulty nutrition in infancy and childhood and are, therefore, a result and not a cause of the enteroptosis. Faecal stasis should be looked upon not as the cause of these conditions, but as a result of them.

8. Gastric and enteric catarrh: Gastric and enteric catarrh may be the source of origin of the toxines. A number of the cases of autointoxication have shown with each exacerbation of symptoms catarrhal conditions of all mucous membranes including those of the nose and throat. Constipation follows. These cases always

require about twice the dose of laxatives at this time than at any other time. Catarrhal inflammation is the result of the toxemia both appear almost simultaneously.

The General Result of these Abdominal Disturbances

Retention of food in the stomach with the imperfect stomach digestion due to general atony of the organ and improper drainage.

Imperfect digestion due to interference with the function of the pancreas.

When there is distinct visceral ptosis the liver also sags, with consequent interference with its function and insufficient quantity of bile.

Retention of faeces in the colon or sigmoid causes fermentation and putrefaction. If such conditions exist long enough they might naturally result in disturbances so marked that they would lead to abnormal absorption and cause systemic manifestations of varying types.

J. E. Draper Maury (JAMA, 1 January 1910) shows that if the normal flow of these digestive elements into the intestines is interfered with, certain bacteria may be found higher up in the intestinal tract than is normal. Not only may the jejunum be invaded, but the duodenum also. **Bacteria may develop in such quantities, or reach such a degree of virulence that the individual becomes unable to resist, and undesirable absorption takes place. Increased intestinal Toxaemia may be due to an increase in the bacterial elements alone from the retention of faecal matter in the colon with excessive absorption, or it may be due to a Malposition of the organs causing a deficient amount or quantity of those digestive fluids upon which the control of the development of the bacteria to a considerable extent depends.**

Granted that we have a Toxaemia, it is only an accident whether the systemic effect is chemical (metabolic) or whether it is bacteriological (infectious) in type, and it is an accident whether either one shows itself in the joints or in some other body structure.

Many cases of Arteriosclerosis, Iritis, Psoriasis, Osteitis Deformans, etc., no doubt originate in the same way.

The aetiology of the cases classed as arthritis deformans is that they are caused by a specific infection or by the absorbed products of putrefactive processes. Among the toxic agents which have been suspected of causing arthritis deformans are the poisons produced by putrefaction of animal proteids in the intestines.

Numerous varieties of bacteria of putrefaction are regular inhabitants of the human intestine.

Flesh proteids ingested supply them a suitable culture medium, for not all the flesh proteids ingested are changed into soluble peptones and absorbed before these bacteria can get at them.

It has been estimated that at least 10%, of the flesh proteids which enter the alimentary canal fall a prey to the bacteria of putrefaction. Multiplying in this culture medium these bacteria make various substances out of the complex

albuminous molecules, some of which can produce toxic effects on the organs and tissues of the body.

Being soluble these putrefactive poisons are to a considerable extent absorbed.

The body in health is well protected against these putrefactive poisons by the intestinal mucosa, the cells of which possess a considerable amount of toxicolytic power, and by the liver which is said to destroy 2/3 of the poisons produced by intestinal putrefaction.

Some also give the ductless glands credit of possessing a toxicolytic function. **The toxines not destroyed in the body are eliminated by the kidneys and to a lesser extent by the skin.**

Putrefactive toxemia may then be increased by anything which increases the number of bacteria present, or anything which diminishes the function of the organs which possess toxicolytic power, or anything which diminishes the activity of the organs of elimination.

Surgeons and obstetricians have learned from experience that when a patient has a sudden rise of temperature, which cannot be accounted for on the ground of infection, the best thing to do is to administer a cathartic or High Enema and thoroughly empty the bowel, a procedure which is generally followed by a prompt reduction in the temperature, pointing to the fact that faecal retention and absorption of toxic products were at the seat of the trouble.

Bacteria may be increased by constipation, faecal stasis, diminished or altered secretions, or an increase of a suitable culture medium in which the bacteria may grow. Toxines may be in excess through hepatic insufficiency or altered glands in the intestinal mucosa or faulty elimination through the skin and kidneys.

The quantity of toxines produced does not determine the amount of disturbance which will follow, but it is the amount of toxines absorbed which is important. Disturbances from putrefactive toxemia also depend to a large extent upon tissue resistance. This varies greatly in different individuals so that an amount of putrefactive toxemia which is harmless to one individual may produce serious disease in another.

There is little doubt that chronic putrefactive toxemia can produce, or strongly assist in producing Bright's disease, arteriosclerosis, cirrhosis of the liver, obstinate headache, epileptoid attacks, functional disorders of the heart and the vasomotor system, irregular fevers, and neurasthenia. In all of these conditions marked benefit is usually derived from treatment which diminishes putrefactive toxemia.

Many cases of rheumatoid arthritis improve markedly under treatment directed against intestinal toxemia; namely, the prevention of the formation, the decrease of absorption, increase in the elimination or increase in the destruction of toxines.

The stools have been examined in a number of cases, but none of them showed any peculiarities that are not found in patients who do not have arthritis.

No bacteria have been found other than the bacillus coli communis and spore forming anaerobic bacteria. It is wise always to examine the stools of patients with chronic arthritis, as many times they will show the existence of intestinal

dyspepsia which may be the point of origin of the toxemia.

The urine in a number of these cases was examined by Helen Baldwin (Organic Acid in the Urine, American Journal of the Medical Sciences, 1904). All but 2 of the 21 cases showed either an excess of aromatic sulphates, or the presence of indican.

Considerable variation was noted. In some instances indican was entirely absent, while in others products of putrefaction (aromatic sulphates) were in excess of normal. In still other instances indol, skatol, or phenol was found in excess, although their total amount was not usually great.

In all cases tested at The Glen Springs indican was found at one time or another.

The following may be considered a typical case of arthritis deformans due to intestinal toxemia:

Case II. Adult, female, aged 40 years, small, poorly developed, with a history of slowly developing arthritis accompanied by a muddy sallow complexion, lustreless eyes (icteroid), loss of weight and hypotonus of the abdominal wall.

Attacks of depression occurred at which time there was a dry coated tongue.

The sclerae were more icteroid and the skin was more sallow. The patient was irritable, nervous, restless, and had restless sleep at this time; constipation, intestinal gas, nausea, loss of appetite, and sometimes indican in the urine were present.

This patient would have attacks of toxemia lasting four or 5 days and an interval of almost one week with very few symptoms. Under treatment for toxemia and the postural treatment the attacks became less severe, shorter in duration, and the intervals between the attacks longer.

Calomel given at the first indication of an approaching attack would either prevent or lessen the attack. In this case there was evident an accumulation of toxines until the resistance of the patient was passed, then a great absorption of toxines took place. Previous to nausea or vomiting the breath usually became progressively more offensive, due undoubtedly to decomposition.

Vomiting or calomel usually relieves these symptoms, while tonics, stomachics, and digestive remedies have only indifferent influence.

The diagnosis can be made provisionally when intestinal toxemia is an important factor, and especially when it has been present previous to the advent of the first symptoms, and when a ptosis or malposition of the abdominal viscera can be discovered by the Rontgen ray test in cases of chronic arthritis.

Previous to the advent of the Rontgen rays as a diagnostic agent in enteroptosis, clinicians had made but little progress over the original discovery of Glenard, for there was no accurate method of determining the organ, or group of organs, chiefly participating in the visceral descensus.

A great deal of attention has always been given to the stomach and small intestine, the process of indigestion and assimilation in the stomach and small intestine has been extensively studied, but until quite recently not much notice has been taken of the large intestine.

The function of the colon seemed apparently to be that of a reservoir placed for the comfort of its owner, to be emptied at any convenient time. It apparently did not play an important part in the economy.

Treatment

In this paper I shall omit the treatment of the joints proper and shall suggest only the principles which must represent the basis of the treatment directed against the removal of the intestinal toxemia and the improvement of the general nutrition. While metabolic osteoarthritis is a definite and perfectly characteristic joint condition, both clinically and pathologically, the general conditions with which it is associated vary within wide limits.

In some cases there are absolutely no definite general symptoms, in others they are sometimes characteristic of one general anomaly and sometimes of another.

With the aid of the Rontgen rays and by clinical and laboratory methods one can often prove a disturbance varying from an apparently insignificant, to a very definite deterioration of the general nutrition, and can often conclude that metabolic osteoarthritis is not due directly to the organic or constitutional conditions with which it is associated, but to the disturbances of the nutrition caused by them.

The difficulty of formulating measures for the control of the bacterial processes concerned with the occurrence of chronic excessive intestinal putrefaction is obvious.

No 2 cases that come under observation are quite alike, hence, specific measures which appear appropriate in 1 case cannot be recommended without modification in another. It becomes, therefore, almost impossible to describe a method of treatment with all the detailed modifications that are necessary in order to cover adequately the specific cases with which one has to deal in practice.

Nevertheless, there are certain general therapeutical guides which, though by no means adequate for the direction of the practitioner in individual cases, are helpful in forming a conception of the principles that must enter into the treatment of the chronic arthritis.

We must attempt to remove the cause of the nutritional disturbance and at the same time aim to increase the joint resistance.

The methods at our command at present are the regulation of the diet, aiding gastric and intestinal digestion and absorption from the digestive tract, correcting malpositions, and favouring normal mobility of the abdominal viscera, eliminating stagnation of the faecal content of the intestines, improving the local and general metabolic processes, and increasing the tissue resistance.

It is important to lay stress on the avoidance of putrefactive bacteria entering with the food. It is impracticable to live exclusively on food that is sterile, but it is well to avoid uncooked food which contains large numbers of putrefactive bacteria.

In a normal stomach these putrefactive bacteria are quickly disposed of, but in

cases of chronic excessive intestinal putrefaction the secretions are altered and may permit the passage of putrefactive bacteria unharmed.

An important measure bearing upon the introduction of putrefactive bacteria into the intestine is the proper cleansing of the mouth, especially where there is dental caries.

Patients in bed, naturally, must receive more easily digested food than those who are about.

All that is required, in the vast majority of cases, is a nutritious mixed diet as generous as can be digested and assimilated by the individual patient without producing putrefaction.

It is obvious, that in order to secure the best possible condition of absorption from the intestinal tract, it is important not to permit the consumption of excessive quantities of food.

This is especially important in the case of proteids, particularly those of meat, poultry, and fish. The use of an excessive quantity of meat frequently goes hand in hand with imperfect mastication. The result is that many masses of muscle fibre find their way through the small intestine into the lower ileum and large intestine, where they are attacked by putrefactive bacteria.

The putrefactive bacteria find in meat proteid and casein good media for their support.

In the light of Chittenden's well known researches it ought to be possible to maintain patients on a relatively low quota of protein so long as the other nutrients are supplied in reasonable amounts. In practice, I usually put the patient on a low protein diet equivalent to about fifty grammes of meat daily.

Complete deprivation of meat in persons who have long been accustomed to its use in large quantities would, be followed by loss of strength, and this would hardly be compensated for by the slight gain in the direction of a diminution of the anaerobes in the large intestine.

If the patient is weak, anemic, and emaciated it is much better to devote a few weeks to the elevation of the digestive functions than to proceed hastily to inaugurate a generous and excessive diet.

Even under the most favourable conditions the effect of a diet must be carefully watched.

If rest can be secured to the patient, and a more thorough digestion and resorption of food can be achieved, it becomes safe to increase the food gradually.

Irritants, such as pepper, mustard, excess of salt, and acids, such as vinegar, lemon juice, etc., should be excluded from the diet.

Buttermilk, kefir, koumyss, Bacillac, etc., or the rectal instillation of autogenous bacteria and strains of human Bacillus coli communis, as recommended by Anthony Bassler, may be of some benefit.

> *"Suitable care of the stomach may also be a factor in controlling putrefactive decomposition in the intestine. In persons suffering from atony of the stomach, with or without pronounced dilatation, putrefactive microorganisms may gain a hold and initiate*

high up in the digestive tract a process which normally begins only in the region of the lower ileum" – Dr Christian A. Herter, MD in "The Common Bacterial Infections of the Digestive Tract and the Intoxications Arising from Them", 1907.

If the chronic arthritis is dependent upon a nutritional disturbance, resulting from a dilatation of the stomach or a visceral ptosis, naturally the first thing to be desired is to restore the organs to as nearly their normal position as possible, and at the same time to correct or relieve any imperfection in their functions which may have resulted from the malposition.

The usual treatment instigated in such cases is, small meals at frequent intervals, a diet which is easily assimilated, gastric lavage for temporary relief of symptoms, or as often as demanded to remove food particles in the stage of decomposition, sinusoidal electricity and massage to the abdomen to tone up relaxed muscles, and the postural treatment given according to the method adopted by Goldthwait.

In this posture there is a normal position of the abdominal viscera during the process of digestion. If the malposition is quite marked and the foregoing treatment proves ineffectual, a visceral supportive apparatus must be employed to correct the visceral displacements and overcome the stasis of the intestinal contents which is quite likely present.

Goldthwait and Brown have emphasized the frequent association of malposition of the viscera in cases of chronic arthritis, a sufficient number to warrant investigation of their presence in every case.

Whether they are the origin of the nutritional disturbance causing the chronic arthritis or merely an associated condition or a result of the nutritional disturbance matters not. They at least will cause troublesome symptoms and may hinder the progress of the treatment directed against the chronic arthritis.

All the measures which aid in securing prompt digestion and absorption from the small intestine will operate to diminish intestinal putrefaction.

An improvement in the quantity of gastric juice secreted and in the quantity of hydrochloric acid which it contains, usually goes hand in hand with the betterment of motility. Well recognized atrophy of the pancreas is frequently found at autopsy in chronic joint cases. In the light of the recent work of J. E. Draper Maury (JAMA, 1 January 1910), the absence of, or the diminution in the amount of the pancreatic juice probably explain many of the phenomena met with in such cases.

The influence of imperfect pancreatic secretion may safely be assumed to be important, but in this case direct clinical observation is not possible and one has to infer the absence or presence of a pancreatic achylia by means of the test meal, by, an examination of the stool, and by the Cammidge reaction.

The most important physiological factor in the partial or complete restoration of the normal gastroenteric secretions is probably rest.

The rest which should be secured in such cases is in part physical and in part mental, emotional, and sexual.

Even the interest attendant on free and animated conversation may be injurious.

Such factors as grief, fear, severe nervous shock, and great physical or mental strains have an association with the joint manifestations.

Every effort should be made to stimulate the local, as well as the general metabolic processes. Digestive enzymes, such as pepsin, trypsin, pancreatin.

> *"The use of an efficient diastatic ferment gives more tangible results and there are cases in which a better utilization of carbohydrate is noticeable in consequence of the use of an active diastase. The criterion in such cases has been the better tolerance for carbohydrates, which is manifested by the reduction in habitual flatulence, especially in the upper part of the digestive tract." - Dr Christian A. Herter, MD*

Among the agents most used with a view of reducing fermentation and putrefactive decomposition in the gastrointestinal tract are the so called intestinal antiseptics. These drugs, however, should be used with caution. If the chronic arthritis is due to a deterioration of nutrition, it is well not to increase the deterioration by giving irritating and depressing drugs.

All experiments with a view of determining the value of intestinal antiseptics have left out of account a quantitative study of the putrefactive anaerobes of the faeces. Another agent which has been used by clinicians in cases of chronic arthritis is thyroid extract. I saw beneficial results in 2 early cases of arthritis deformans.

Considerable benefit may be derived where this organ is atrophied and the vasomotor phenomena peculiar to the disease are prominent, and in cases of obesity associated with arthritis.

It is well known to clinicians that the use of laxatives is followed by great temporary benefit in many cases of excessive intestinal putrefaction, with or without constipation.

In Marshall's case there were daily evacuations of the bowels and yet there was an enormous faecal retention.

The mere acceleration of the contents of the digestive tract will greatly aid in the prevention of putrefaction. In bedridden and sedentary patients there is a tendency to constipation, which must be relieved by mild laxatives or enemata.

Daily evacuation of the bowels must be secured, but I have seen absolutely no indication for drastic eliminative treatment, and I have seen no case of true metabolic osteoarthritis in which such measures were not harmful.

Many times we increase the amount of absorption of toxic products from the intestinal tract by making the contents of the intestine liquid.

It is easy to render the digestive tract excessively irritable through their use, and it often happens that patients fail in nutrition owing to the diminished absorption of foodstuff's.

The long continued and frequent use of cathartic remedies has, in my experience, nearly always resulted badly.

Laxatives should be employed mainly for the control of the disturbances of a

subacute or chronic character arising in the course of chronic derangements rather than for the treatment of the chronic conditions themselves.

The bowels can often be controlled through regulation of the diet, regularity of going to stools, exercise, abdominal massage, correction of kinks or ptoses of viscera or malposition of pelvic organs, and by an abdominal supportive apparatus.

Any of these measures are much more desirable than the continued drugging with laxatives. No one procedure should be kept up indefinitely.

Operative procedures may be demanded, such as colostomies, cholecystostomies, appendicostomies, resection of redundant colon or sigmoid, and operations on the stomach. It seems highly probable that the relief afforded in these cases has been due in most instances, in part at least, to the greatly improved conditions of bacterial activity which followed the removal of a source of stagnation and putrefaction in the digestive tract.

Pyloroplastic operations have been known to be followed by diminished ethereal sulphates." - Dr Charles Clyde Sutter, MD in "New York Medical Journal", 24 February 1912.

Lectures on Experimental Pathology, and Operative Physiology

"Necessity of a Knowledge of other Sciences in the Study of Medicine Pathological Symptoms can be produced by Artificial Means, Can Pathological Symptoms be Explained on Physiological Principles?

The Nervous System, the Origin of all the Normal Phenomena of Life, as well as of all Pathological Action, Development of Nervous System increases as we rise in the Scale of Animal Life, A great Proportion of Diseases can he produced at pleasure, by Operating on Different Parts of the Nervous System, without the introduction of any new Principle into the Economy, Effects Produced on a Muscle or Bone when Deprived of its Nervous Supply, Certain Morbid Phenomena, apparently incapable of being Reproduced, are nevertheless Dependent on the Nervous

System, and can be called into action at the pleasure of the Physiologist Perverted Nutrition the Source of all Morbid Tissue, Influence of Nervous System on Nutrition,Disease not an Isolated Symptom, but a Series of Symptoms, Effect of Extirpation of Kidneys and Ligature of the Renal Arteries, Vicarious Elimination of the Urea by the Intestinal Mucous Membrane, Effect of the Cessation of this Vicarious Elimination of Urea, Extirpation of both Kidneys always followed by Death.

Certain Maladies can only be produced by Agents exterior to the Body, Removal of One Kidney not Fatal, its Function being performed by the remaining one, Section of Renal Nerves always proves Fatal, by leading to Destruction of Kidneys

and the Product on of an Animal Poison in the Interior of the Body, Initial Proposition Established; Morbid Symptoms and Actual Diseases can be Produced by Artificial Means, Pathology a Combination of Physiology and Clinical Medicine." - M. Claude Bernard in "New Orleans medical news and hospital gazette", 1860

"I endeavoured to combat an opinion, too generally entertained, viz. that physiological phenomena belong to an order of facts entirely foreign to those which occur in the morbid state. We shall now enter on the study of the symptoms peculiar to the pathological state, the agents which give rise to them, and those calculated to bring about their removal; lastly, we shall produce all the phenomena of disease by artificial means, and shall then endeavour to make them disappear.

If in the case of an adult in the full enjoyment of all his faculties, we ask ourselves what is the regulating agent, what the primum mobile of all physiological actions, we are constrained to reply that its seat is in the nervous system. It is to the nervous system that we owe both sensibility and voluntary motion, that two-fold source of all our relations with the external world; it presides over all organic functions, while it is the origin of all the normal phenomena of life, it is also that of all pathological action.

In proportion as we ascend in the scale of animal life, we see the nervous system acquire greater development, and at the same time we observe that diseases become more frequent, more variable in their form, and more complicated in their nature.

Why should this coincidence astonish us?

Are not all our organs dependant directly on the nervous system?

If we take, one by one, the different systems of the animal economy, it will be easy to show that all the symptoms of the diseases to which they are liable, may be produced by direct irritation of their corresponding nerves.

We can even give rise, in this way, to all the anatomical lesions by which they are characterised.

What, for instance, are the principal signs of the affections of the respiratory organs?

Cough, dyspnoea, increased bronchial secretion; are not these the symptoms which most frequently proclaim their existence?

Now all these phenomena can be produced at will by the direct excitation of the pneumogastric or certain other nerves; we can even call into existence the anatomical lesions incidental to pleurisy and pericarditis.

The causes of these morbid changes would therefore appear to be intimately connected with the nervous system.

If we now turn our attention to the digestive apparatus, we shall soon be convinced that the physiologist possesses the same power relative to it, as he does in the case of the respiratory organs. By exciting the solar plexus and its efferent branches, we can determine both diarrhoea and dysentery, together with the anatomical lesions which habitually accompany them.

Acute peritonitis has even been induced with all its consequences, as evidenced on opening the animal, by the presence of pus and false membrane in the peritoneal cavity.

Thus, then, a multitude of diseases may be brought into existence by a simple modification of the elements which the animal economy originally contains, without having recourse to the introduction of any new principle; and, if we were to examine the other systems of the body, results analogous in their nature would be obtained.

Fever itself, that essentially symptom, can be excited by a mere mechanical irritation of the nervous system, and the products of inflammation, such as pus, false membranes, and plastic exudations, may, any, or all of them, be called into existence, in a similar way.

In an animal, previously enfeebled, we can produce

directly pleuritis with purulent deposit, by the simple division of the great sympathetic nerve; in order, however, to ensure success in this experiment, it is absolutely necessary that the state or condition of the animal's health be previously lowered.

It is, therefore, a fact, that the perverted state of the nervous system gives rise to a great variety of diseases, not only of a general, but also of a local character: deprive a muscle or a bone of its nervous supply, and you will have, as a consequence, fatty degeneration in the one case, and rickets in the other; in fact, if you tie the nerves, which enter the nutritive foramina of a bone, you will very soon see the cells of the lamellar structure increase in size, the vessels become more numerous, and all the phenomena of rickets follow in rapid sucession: we can even bring about these results on part of a bone, without interfering with the remainder.

This experiment has been successfully carried out, in the case of the lower jaw, by M. Schiff of Berne.

But there exists in disease an immense number of other phenomena which, at first sight, it appears impossible to produce by a simple lesion of the nervous system; I allude especially to the alteration or modification of the fluids of the

body, which takes place in the course of certain maladies.

Now I am prepared to demonstrate that a vast number, if not all, of these morbid changes, are still to be traced to the action of the nervous system, and that they can be reproduced at pleasure by the physiologist.

Among the various fluids of the body, the urine is that one the morbid changes of which have been the most carefully and completely investigated.

Now you are perfectly aware, that albuminuria, polyuria, and diabetes, are invariably produced by excitation of definite points of the medulla oblongata, the peculiar form of the perverted urinary secretion being determined by the particular portion which is acted on: it is in the case of diabetes especially that the importance of this experimental fact is fully brought out.

Every disease which gives birth to morbid tissue is evidently a perversion of the nutritive function; now who will venture to deny the influence which the nervous

system exercises over this physiological act?

But we must bear in mind that a disease is not characterised by one single symptom; it consists rather of a complete series of symptoms, standing to each other in the relation of cause and effect.

It is, in fact, a morbid evolution which offers a commencement, a middle, and an end; so that a skilful and practised observer, on witnessing the first stage of a disease, can predict its probable termination.

This is no doubt true; disease does not consist in an isolated symptom; it is a collection of symptoms.

Now these reunions of morbid phenomena, we indubitably succeed in reproducing in animals. The functions of life are modified in various ways by a variety of different agents.

Poisons determine real disease which present an unbroken chain of symptoms, consequent on the introduction into the system of the toxic agent. Here, therefore, we find an entire class of diseases which can be produced at will.

Let us inquire whether, by mere surgical operations, mechanical lesions, we can determine on the animals subjected a certain number of morbid series. If you simultaneously remove the 2 kidneys of a dog, or simply tie the renal arteries, you immediately produce a general disturbance in the entire economy.

The animal is powerless in expelling the excrementitial product which should pass off by this channel, and the whole system becomes gradually poisoned. At first the animal is not seriously affected; it continues to eat and digest its food for a certain lapse of time, which corresponds with the period of incubation in diseases; by-and-by it is attacked with vomiting and purging, shortly after which it dies.

What takes place in a case like this?

During the first period the urea, which can no longer be eliminated by the kidneys, is expelled by the intestines. It is found, together with the salts of ammonia, in the animal's excrements, and even in the gastric juice.

If this new mode of elimination could be prolonged indefinitely the animal would not become diseased, it would not die; but very soon the mucous membrane of the intestines, irritated by the constant contact with the ammoniacal salts, gives rise to morbid changes.

On the other hand, as long as the urea is eliminated by the intestines, it does not find its way into the blood. This fact has been demonstrated experimentally by Prevost and Dumas, at a later period, when the mucous lining of the intestine refuses to continue this function, which is altogether foreign to it, the urea finds its way into the blood, and the animal soon expires, comatose and convulsed.

When the cessation of the urinary secretion depends on the ligature of the renal arteries, this state of things may sometimes be obviated by removing the ligatures; the self-same thing would also take place in man, if there existed an obstacle to the passage of the urine, and if it were possible to remove that obstacle j but in all cases in which the kidneys have been removed death has always supervened. The destruction of the animal has been the invariable termination of the morbid series.

Here, we have a disease which can be artificially produced; but there are many others, the causes of which are agents existing exterior to the body; contagious affections belong to this class. But independently of these various causes, accidents occur, and give origin to various affections in the economy.

This has been experimentally proved; if you remove both the kidneys of an animal it dies; if you remove, however, only one kidney, the animal continues to live; the organ becomes enlarged, and plays both its own part and that of its absent fellow; a fact which can be easily ascertained by opening the animal a certain time after the operation has been performed.

But if, instead of removing the kidneys, you simply make a division of their nerves, the animal dies.

During the first few days which follow the operation albuminuria is produced; shortly after, inflammation of the kidneys sets up; they then mortify and become decomposed; so that, finally, they act on the economy like a septic poison, which inevitably leads to death.

Such I consider to be the natural explanation of this apparently mysterious fact.

I now presume that I have established the initial proposition: **Not only can we succeed in producing morbid symptoms in animals by artificial means, but even actual diseases, with their complete chain of results.**

Pathology, regarded from this point of view, combines the resources of Physiology with those derived from clinical observation." - Claude Bernard, Professor of General Physiology at the Academy of Sciences in "The Medical Times and Gazette", 21 January 1860.

Pregnant Woman Natural Symptoms

"When nature starts a pregnancy, she makes strenuous efforts to eliminate all the old accumulated toxic matter in the woman's body in order to have a cleaner chemical field for the gestation of the fetus.

The womb suddenly is transformed from an organ through which vicarious elimination of toxins can take place into a non-menstruating organ which must act as a receptacle for the developing child.

My studies have shown that to facilitate the cleansing process, the mother's body throws out a great deal of its background toxemia through the liver as an irritating bile.

As this is eliminated it causes all the side reactions which may be classified under the heading "toxemia of pregnancy":

1. Nausea
2. Vomiting
3. Fatigue
4. Nervousness

5. Indigestion
6. Headache".

- Dr Henry G. Bieler, MD, in "Food is Your Best Medicine".

An Experimental Study of the Cause of Death in Acute Intestinal Obstruction Absorption

"The 2 avenues by which this toxic substance found in obstructed intestine may be absorbed are the Lymphatics of the Mesentery, and those of the General Peritoneal Cavity.

Different mechanical lesions illustrate in a striking manner the influence which the mode of absorption plays in the intensity of the toxic symptoms.

In the venous obstruction type of lesion, the direct avenues of absorption, i.e., the lymphatics, are left open, and the intestinal content is under pressure.

The animal after 4 to 6 hours is markedly toxic. Cultures from the peritoneal cavity at this time are, as a rule, sterile. Injection of the free fluid of the peritoneum into guinea-pigs is usually without results.

That is, the avenue of direct absorption is active and the intestinal wall still acts as a barrier to the passage of the toxic material into the general peritoneal cavity.

The total anaemia obstruction produces an intestinal content which, judged by injections, is as toxic as the venous obstruction, yet these animals after from 4 to 6 hours show no symptoms. This probably is so because the direct channel of absorption through the lymphatics of the mesentery is blocked, and since the intestinal wall is not yet permeable, the lymphatics of the peritoneal cavity play no part in the process of absorption. Later, the intestinal wall becomes necrotic and peritonitis follows.

In the lymphatic obstruction the conditions are identical with venous obstruction so far as the production of the toxic material and the pressure under which the content is confined are concerned, but the direct avenue of absorption via the lymphatics of the mesentery is blocked.

These animals with lymphatic obstruction present, after from 4 to 6 hours, a distinctly different picture from that seen in venous obstruction.

They are sick and show some fall in the temperature, but they have not lost the muscular tone.

By the pressure within the intestine and the change in the intestinal wall, the barrier to absorption formed by the intestine is broken down earlier than in the cases of total anaemia, and the time of death more nearly approximates that seen in venous obstruction.

Summary

The results of our experimental work may be summarized as follows:

1. Interference with circulation of obstructed intestine is the vital factor in the production of the typical symptoms of acute ileus. The obstruction of the venous return is the most important element in this circulatory disturbance.
2. The acute symptoms are caused by the absorption of a toxic substance which is found in the obstructed intestine.
3. This toxic substance is destroyed by boiling. It is not soluble in water and will not pass through the Berkefeld filter.
4. The formation of this substance probably is not dependent on any vital secretion of the mucous membrane of the intestine.
5. The rapidity of absorption varies, dependent on the patency of the lymphatic channels in the mesentery, and the permeability of the intestinal wall.

Conclusions

We conclude, therefore, that this toxic substance is purely bacterial in origin and that the living bacteria with their end toxins, not the putrefactive products nor the chemical poisons, **are directly responsible for the profound symptoms and death in acute intestinal obstruction.**" - Dr Fred T. Murphy, MD in "An Experimental Study of the Cause of Death in Acute Intestinal Obstruction", Boston Medical and Surgical Journal, 2 November 1911.

Hypertoxus of the Sympathetic in Relation to Intestinal Toxaemia

"Intestinal toxaemia is so frequently present in the human subject, and its effects are so various, so widespread, and so serious, that the problem it presents as regards diagnosis and treatment demands careful consideration on the part of the physician.

In its causation, many varieties of micro-organisms take part, each producing toxins which, absorbed by the bloodstream, give rise to special symptoms.

These are in some instances sufficiently characteristic to be of diagnostic value as indicating more or less exactly the variety of toxin which is acting.

The bacteriological examination of the intestinal excreta is, of course, of a high importance; but, as regards diagnosis, a yet greater importance appears to me to attach to the definite clinical recognition of the special tissues upon which the toxin is acting and from which the signs of toxaemia arise.

Most, though not all, of the signs and symptoms of intestinal toxaemia develop as the result of toxic action on the neurones of the autonomic or involuntary nervous system.

The 2 great divisions of that system: the Sympathetic and the Parasympathetic , may each suffer, the incidence depending upon the particular variety of toxin which is acting.

Moreover, the symptoms which result from disturbance of these 2 groups of neurones differ as materially as do their functions.

For the Sympathetic, and Para-Sympathetic systems are diametrically opposed in function the one to the other, much as the lights and shades of a photographic positive differ from those of the negative of which it is a print.

The observations on which this paper is founded deal exclusively with the results of such Toxic Action as affects the Sympathetic System proper and not the para-sympathetic.

Moreover, of the toxines which do so act, the effects on the human subject of one only will be considered, namely, those of para-h-droxy-phenyl-eth-lamine, probably the most powerful of the Amines which select the sympathetic neurones for attack.

The underlying condition which tends to produce putrefactive changes, with consequent intestinal toxaemia, is delay in the passage of material through the gastro-intestinal tract.

This abnormal delay is usually most marked in the lower coils of the ileum, and the resulting ileal stasis favours the infection of the contents with pathogenic organisms.

The greater the stasis the more intense will be the putrefactive changes and the more considerable the production of toxins.

Some further observations on this subject will be made subsequently.

In the meantime let us consider certain of the digestive processes which normally occur in the human intestine, especially those in the ileum.

In the course of normal metabolic activities, the proteins are hydrolysed into amino-acids. Various digestive enzymes take part in this process, which is completed by the erepsin of the succus entericus.

These amino-acids are carried by the blood to the liver, where they are de-aminated, the resulting ammonia being excreted as urea, and the fatty acids being used as energy producers.

A serious modification of this process occurs in cases of intestinal stasis, for in many persons with this condition these amino acids are attacked by pathogenic organisms, with the result that various amines are formed which are more or less toxic (this subject is fully discussed by Barger).

The bacteria which thus act are anaerobes, or at least facultative anaerobes, and the Amines so formed fall into 2 groups, Mon-amines and Di-amines.

The di-amines, of which the very dangerous B-iminazolyl-ethylamine may be taken as a type, are depressors, but with these we are not at present concerned.

The group of mon-amines, on the other hand, have a pressor action, and so closely do their activities resemble the results of stimulation of the sympathetic neurones that they have been called “sympatho-mimetic amines”.

We are concerned now with the action on the human subject of but one of

these, namely para-hydroxy-phenyl-ethylamine (a phosphate salt of this base is sold under the registered trade name of Tyramine).

This toxic amine is derived from tyrosine, one of the aminoacids, and is formed, chiefly in the lower ileum, by the action of faecal bacteria under anaerobic conditions.

It is conveyed to the liver by the blood-stream, there to be converted into p-hydroxy-phenyl-acetic acid, and in this form it is ultimately excreted in the urine.

The pressor action of this Amine is considered to be about 1 over 20 of that of adrenaline.

A special interest attaches to p-hydroxy-phenyl-ethylamine, since in many patients in whom signs of hypertonus of the sympathetic show themselves, this is the causative agent.

Certainly, in suitable cases of intestinal toxaemia we can detect its presence in the urine, and we can observe its clinical signs with fair accuracy.

Certain of these effects have been already investigated.

It is well known, for example, that this Amine, when administered hypodermically in doses of 20 to 60 mg., raises the bloodpressure very considerably.

The height of the rise is usually reached in ten or twelve minutes, and its duration is about 25 minutes. As one would expect, this increase of systolic pressure is specially well-marked in persons who already show some sympathetic hypertonus.

For example, in a case of this kind - a boy of 17 - we observed the blood-pressure to rise to nearly 200 mm. as the result of a comparatively small dose of the Amine, 0-03 g.

Hewlett, in his observations, notes that the diastolic pressure also rises. This I have not found to be invariably the case.

On the contrary, in certain persons at any rate, a diastolic fall takes place coincident with the systolic rise. The pressures being charted from the records obtained in the case of a healthy man of 40, the readings being taken just before and after the subcutaneous administration of a dose of 0-05 g.

The Amine itself is insoluble in water, and in all the observations here recorded I made use of the acid phosphate of the base which is freely soluble.

The readings of blood-pressure were taken by the auscultatory method, the Tycos sphygmomanometer being used.

The cause of the rise in systolic pressure produced by this Amine is not fully clear.

No doubt it is mainly due to a contraction of the peripheral arterioles such as follows sympathetic stimulation, possibly also to constriction of the capillaries.

There are, however, other factors at work, and to one of these allusion will be made subsequently.

Coincident with the rise in the systolic pressure there is a marked fall in the rate of the pulse. Such a fall is what we should expect to result from so sudden a rise of blood-pressure. It is the expression of one of the most important

protective-reflexes of the body.

The receptors (proprio-ceptive) lie in the arch of the aorta and in the cardiac wall.

Their adequate stimulus consists in the stretching of the tissues in which they lie, and when that stretching occurs (as must take place when the blood-pressure rises), an impulse passes by the afferent neurones of the depressor nerve of de Cyon (in man and in most mammals these neurones do not run as a separate nerve, but are mixed with vagal fibres) to the vagus centre in the medulla (probably to the nucleus intercalatus), and is thence reflected down the vagal inhibitory neurones, the result of this stimulus being to slow the beat of the heart.

To the action of this reflex may also be ascribed the fall in diastolic pressure, which I have observed.

If now, in a case of chronic ileal stasis and intestinal toxaemia, this pressor toxine, p-hydroxy-phenyl-ethylamine, has been formed continuously, though perhaps in small quantity, and as continuously absorbed, it is clear that the patient must have been exposed to the effects of a blood-pressure constantly above normal.

The results which we know are apt to follow any sustained high pressure are those we should expect to meet with in such a patient.

Prominent among these are Arterio-sclerosis and Chronic Interstitial Nephritis, and it is important to remember that just these very changes are capable of being produced by the pressor Amine, the actions of which we are now studying.

The experiments of Harvey are clear on this point. He gave the Amine to rabbits sometimes intravenously, sometimes by the mouth, in small doses, the treatment lasting for many weeks.

The first pathological changes resulting from the action of the Amine showed themselves in the aorta. A general arterio-sclerosis followed, and finally nephritis developed. Such conditions are much more likely to be due to the slow but continuous pressor action of such an Amine as the one we are now considering.

Apart, that is, from syphilis, the most potent cause of all.

Indeed, there cannot be any doubt that Arterio-sclerosis, Chronic Nephritis, and Rheumatoid Arthritis may one and all result from intestinal toxaemia, and that the lines of treatment which I shall indicate as suitable for cases of poisoning by para-hydroxy-phenyl-ethylamine are more or less applicable to these disorders also.

In view of what has been said, we must now consider how we are to correlate the phenomena of hypertonicity of the sympathetic with the effects of the Amine.

As regards the rise in blood-pressure which follows the action of the Amine, there is no difficulty, for the pressure tends to be high in cases in which there is over-stimulation of the sympathetic neurones.

The change in the pulse-rate, however, presents a problem of some complexity.

On the one hand, as has been seen, the rate is materially lowered after the administration of the Amine.

On the other hand, the rate is high in cases of sympathetic hypertonus,

sometimes very high when the condition passes into that of Graves disease—a syndrome which has been well described as that of "crystallised fear".

But in this connection, in facing this problem, various factors have to be taken into account.

It must be remembered that in normal subjects on whom these observations were made, the dose of the Amine administered was comparatively very large, that it was suddenly thrown into the circulation, and that it was evidently destroyed quickly in the tissues, the maximum effect passing off with rapidity.

In marked contrast to this stand the conditions under which hypertonicity of the sympathetic neurones is usually developed.

Here we must think of a slow, steady, continuous, but minute toxic action on neurones already, it may be, weak in resisting power and therefore hypersensitive and easily attacked, the action lasting, in many cases, for months or years.

Moreover, in such a case, although this Amine may be the underlying cause of the symptoms, it is not the only cause; for over-stimulation of the sympathetic tends to hyperthyroidism as well as to hyperadrenalism, the condition going on often enough to actual Graves disease.

In the observations here recorded, the action of the Amine was probably too evanescent to produce evident effect on the thyroid.

The clinical action of the Amine, in small but continuous absorption over long periods, as in a case of intestinal toxaemia, would be as follows.

Hypertonus of the sympathetic would result, rendering these neurones more susceptible to those stimuli - fright, etc. - to which they normally react, and to which, in such a case, they would react in quite abnormal measure.

There would then occur a certain rise of blood-pressure and an increase in the pulse-rate.

The adrenal glands would be stimulated, the thyroid also, for its innervation is entirely sympathetic. Moreover, increased thyroid activity would in its turn stimulate the secretion of adrenaline.

Indeed, as Cramer has pointed out, "hyperthyroidism is in effect a slight but continuous adrenalism", a conclusion which is confirmed by clinical evidence.

These, as I conceive, are the processes, the links in the chain, by which the slow but continuous absorption of p-hydroxyphenyl-ethylamine over long periods of time leads to hypertonicity of the sympathetic, and in certain cases even to the striking phenomena of Graves disease.

But bradycardia and high blood-pressure are not the only phenomena which follow the subcutaneous injection of parahydroxy-phenyl-ethylamine in the human subject.

When we examined the blood before and after the subcutaneous injection of this Amine, various notable changes were found to have resulted from the action of the toxine.

In the first place, the red blood-count rises very materially, sometimes to 8,000,000 or even above that figure.

In this increase we find another resemblance between the results of the action of

the Amine and that of adrenaline. But there are other blood changes, for the leucocyte count also rises, sometimes more or less in proportion to the rise in the reds, sometimes out of all proportion.

This increase, which we found in both red and white cells in the blood-count, suggested the possibility that for some reason plasma had been lost with consequent concentration of the blood, the number of both reds and whites being thus apparently increased.

Animal experiment has shown that adrenaline in causing a great increase in the red count, does so by acting on the liver from which red blood-cells are poured out.

The Amine is changed in the liver into the acetic acid compound.

Various considerations must guide us, and to these attention must now be directed.

The first of these is the question of diet. What variety of food is most favourable to the production of these toxines? The amino-acids, from which they are formed by bacterial activity, result from the action of various gastro-intestinal enzymes on the protein molecule.

When the sympathetic is in a condition of hypertonicity, such as intestinal toxaemia may occasion, certain definite effects on the gastro-intestinal tract are produced.

The general result is to cause contraction of the sphincters and relaxation of the wall of the stomach - and intestine generally. It is said that a similar effect is produced on the wall of the oesophagus and on the sphincter at the cardiac orifice, but this I have not been able to observe.

In any case, the gastric dilatation and the comparative atony of the intestinal wall, together with the spasm of the pylorus and of the ileocolic sphincter, are factors of high importance, leading to marked retardation in the passage onwards of the gastro-intestinal contents. In so far as the absorption of toxines is concerned, the considerations of most importance are the state of the stomach, of the lower coils of the ileum, and of the colon.

The delay in the stomach may be of considerable duration, and the opportunity for decomposition of its contents thus presented is further enhanced by reason of the deficiency in the secretion of gastric juice which sympathetic hypertonus produces.

The inhibiting action of hydrochloric acid on fermentative changes which normally occurs is thus much diminished. But the ileal stasis which results from atony of the gut with spasm of the ileo-colic sphincter is yet more important, leading as it does to further delay in the atonic colon, which itself tends to become overloaded.

To ensure a more rapid passage of the contents of the bowel, laxatives are usually required, and along with these the administration of paraffin is very useful. In addition to its lubricating action, it probably limits the absorption of toxins by the intestinal wall, as Leonard Williams has pointed out.

I have occasionally used physostigmine salicylate with benefit as an aperient in

minute doses.

Theoretically, its action in causing peristalsis and thus antagonising the effect of sympathetic stimulation, would indicate its employment.

A much more important line of treatment, however, consists in the use of such measures as are calculated to limit bacterial putrefaction and the consequent formation of the Amine.

This may be accomplished more or less effectively in 2 ways: by the administration of intestinal antiseptics, and by the use of a carefully prepared autogenous vaccine.

Of the former. Thymol, which is probably the most effective, has long been known as a potent remedy for this purpose. It was, so far as I know, first used as an intestinal antiseptic by Kuessner, in 1878, then by Bozzolo of Turin in 1881.

Of late its employment has been recommended by M. Carrison in cases of endemic and other forms of goitre.

I have given it in many cases, in doses of 5 to 10 grains, twice daily and with good results.

In 1 or 2 instances some gastric discomfort followed, but as a rule it is well borne.

Great care must be taken to avoid the use of such solvents as glycerine, fats, oils, and alcohol during the period of the administration of Thymol.

The following notes of a case, very briefly given, may serve to illustrate the usefulness of this remedy:

Case 1 — T. R., a man of 30, came under observation last March. His pulse-rate was then rapid, 108-112, the blood-picture showed a high lymphocyte count, there was muscular tremor, the eyes were prominent and the pupils dilated. There were, in short, certain of the signs of hypertonus of the sympathetic. On examination with X-rays after a Bi-meal, ileal stasis showed itself and the colon was relaxed and overloaded. A specimen of the 24 hours urine examined on 20th March by Mutch's method gave a dark mahogany colour with Millon's reagent, showing that p-hydroxy-phenyl-acetic acid was present in large quantity.

The Amine was therefore being absorbed and was causing toxaemia. In addition to this, the urine gave the tests for urobilin in a marked degree, the amylic acid solution showing a brilliant green fluorescence and giving with the spectroscope a deep absorption-band up to the line b.

Probably the presence of urobilin indicated that intestinal toxines were disturbing the hepatic functions, as well as causing hypertonus of the sympathetic.

On the same day—the 20th of March—this patient was put under the influence of Thymol, 10 grains being given twice a day.

Four days later, the urine gave no indication of the presence of the Amine, though urobilin was still detectable in small quantity. By the 31st no trace of either substance could be found. The pulse-rate had then fallen to 78-82 and the general condition of the patient was satisfactory.

Short notes of another case also suffering from the toxic action of the Amine, and with more prominent sympathetic symptoms, may be given.

Case 2 — Mrs K. S. was sent to me some months ago. She was then complaining of distressing palpitation, emaciation, and weakness.

Her nervousness was unusually great for such a case, and the muscular tremor very marked. The eyes were prominent and the pupils dilated.

The pulse-rate was from 96 to 108. Ileal stasis was present. She was given Thymol, at first in 5-grain doses; a week later the dose was raised to 10 grains, twice daily. At the end of three weeks of such treatment it was noted that there was marked general improvement, that the nervous excitability which had been extreme was now so much abated as not to be noticeable.

The tremor, though slight, was still present, the eyeballs were less prominent, and the pulse-rate had fallen to 84-90.

Of other intestinal antiseptics, I prefer grey powder in small doses and b-naphthol. These may be given alone or together.

Acetyl-methyl-salicylate (salacetol) along with ichthalbin, I used to find an excellent combination.

I have seen benefit follow the use of yadil, given by the mouth and also used in colon lavage.

The second method which may be employed for limiting the activity of pathogenic intestinal organisms is by means of a vaccine. This should invariably be autogenous, and be prepared from the faeces. Bertelot was, I think, the first to isolate the organisms which have the power of breaking up amino-acids.

Bacillus aminophilus intestinalis. This bacillus, which belongs to the typhoid-coli group, has the power under suitable conditions, of breaking up tyrosine in the manner already described and producing p-hydroxy-phenyl-ethylamine.

It is a facultative anaerobe, and consequently the vaccine must be prepared from anaerobic cultures.

In some cases, though not in all, a vaccine so prepared gives excellent results. The following case, in which the clinical evidences of the toxic action of the Amine were conspicuous, may serve as an example.

Case 3 — L. B., a girl of 21, came for advice on account of nervousness, palpitation, weakness, and vague abdominal symptoms. She stated that she had lost weight to a considerable extent, her manner- was restless, she was easily excited, and her face had an anxious expression. She flushed easily and there was marked tremor of hands and eyelids. Her eyes were rather prominent, but there was no goitre though the thyroid was perhaps a little full. The pupils gave

Lowi's reaction with adrenaline. She complained of palpitation and there was a degree of tachycardia, the rate of the pulse being 100-108.

The systolic blood-pressure was 138, and the blood-picture showed that a considerable lymphocytosis was present.

The administration of 100 grains of glucose caused marked glycosuria, and a

subcutaneous injection of adrenaline had a similar though slighter result.

The abdominal discomfort hardly amounted to pain and appeared to be the result of the obstinate constipation from which she suffered.

Two months later, after treatment with B-Naphthol and then with Thymol, it was found that considerable improvement had taken place in her condition. But, nevertheless, things were not wholly satisfactory, for the patient was still unduly excitable, there was still some tremor, and the lymphocyte count was still high. It was therefore decided to try the effect of a vaccine to be obtained from the faeces.

Dr Wang, in the laboratory of the Royal College of Physicians, kindly undertook to carry through the necessary anaerobic cultures and to prepare the vaccine.

During the weeks which followed, the patient received increasing doses of this vaccine at intervals of 6 or 7 days, and after about 2 months of this treatment she was again examined carefully. It was then noted that she had gained weight, that the tremor had disappeared, that the cardiac action was now quiet, the pulse-rate being about 80, and that she had no palpitation or other symptom, though some increase of lymphocytes was still present. The patient declared that she felt "perfectly well".

An attempt has been made in these pages and by means of the observations here recorded, to indicate certain, at any rate, of the actions on the human subject of the pressor amine derived by bacterial action from tyrosine, namely p-hydroxy-phenylethylamine.

The older observations regarding the increase of bloodpressure and the coincident bradycardia have, in the main, been confirmed.

In addition to these facts, it has been found that certain profound changes in the blood-picture result from the action of the Amine. These consist chiefly in a great increase in the number of red cells and in a very marked lymphocytosis.

The striking similarity between the results of the action of the Amine and the symptoms of hypertonicity of the sympathetic and consequently of hyperadrenalism has been pointed out.

It has further been shown that in many cases of sympathetic hypertonicity the toxic action of the Amine may not only be inferred but also that its presence may be actually demonstrated and the diagnosis established.

Various methods of treatment of this form of intestinal toxaemia have been discussed, and cases illustrative of the results have been given in some detail.

No attempt has been made in this paper to deal with other forms of intestinal toxaemia which arise as the result of bacterial action in cases of constipation from stasis in various portions of the gastro-intestinal tract, but it is hoped to treat of some of these, which are of high importance, on a future occasion.

Hitherto attention has been directed mainly to the deleterious action of this Amine, but before concluding I should like to add one observation of a different kind, taken from a totally different point of view.

The fact that such marked lymphocytosis follows the administration of the Amine suggested that its employment might be of some therapeutic value in

diseases such as tuberculosis, where lymphocytosis occurs in the attempt on the part of the body to react protectively against the invasion of the bacillus.

As regards the practical utility of this form of treatment, however, I have not yet obtained sufficient data to justify any decided statement." - Dr J. J. Graham Brown, MD, FRCPE, Consulting Physician, Royal Infirmary of Edinburgh, in "Edinburgh Medical Journal", 1920.

"It is, and always will be, our part rather to watch Nature than to rule her.

Much had been done before our epoch begins; the heart, the lungs, the alimentary and the excretory organs bad been deeply studied.

Of late years, **nothing has made so profound a change in our view of the world as the progress of bacteriology, and in the last few years a younger theory still that of the "auto-intoxications", has made a certain impression upon thought.**

While we have won for ourselves some active weapons, it is our higher merit to have learnt the lesson which the great men were busy teaching us in 1840: that **disease is the effort which the body makes in answer to attack, and that he is the better physician who studies more to assist the defence than to defeat the enemy."** - in "Medicine", The British Medical Journal, 19 June 1897.

Chapter 66

Relation of Intestinal Toxaemia to Chronic Arthritis, Treatment

"**Exacerbations of the joint symptoms often follow definitely recognized increase of digestive or gastrointestinal disturbances**. Some patients have had periodical attacks of toxemia with nausea, vomiting, general depression, loss of appetite, coated tongue, and indican in the urine. Laxatives in these cases removes the symptoms of toxemia and at the same time the joint symptoms are improved.

Many patients with Arthritis are completely relieved by preventing the absorption of substances from the large intestine by Colonic Irrigation, and regulation of the diet. In this paper I wish to emphasize the fact that in some cases of chronic arthritis, the removal of intestinal toxaemia has been followed by cure or the symptoms have been relieved.

The Toxemia which in one case may be the cause of Arthritis, in another case may manifest itself in:

1. Arteriasclerosis.
2. Bright's Disease.
3. Cirrhosis of the Liver.
4. Catarrhal otitis media.
5. Vascular and Functional Disturbances of the Eye.
6. Skin lesions, such as:
   a. Eczema.
   b. Urticaria.
   c. Acne.
   d. Erythema.
   e. Pemphigus.
   f. Impetigo, etc.
7. Functional Disorder of the Heart.
8. Vasomotor System.
9. Neurasthenia.
10. Obstinate Headache.
11. Epileptoid Attacks, etc.

Relation of the Joints to the Gastrointestinal Tract

The following diseases show such a relationship:

Fecal Retention - Marshall reports a case of Arthritis and Psoriasis in a man who had no digestive symptoms except occasional slight abdominal pains at night.

Colonic Irrigations were given and at the end of 8 days an enormous accumulation of faecal material was expelled. This resulted in complete recovery from the Arthritis and the Skin Lesions.

Prognosis

The prognosis in cases of chronic arthritis is best in those persons whose symptoms have not only been of moderate duration, persons who have continued actively at work and have committed gross errors in diet, the removal of the obviously injurious conditions in these cases is almost always followed by a quick and satisfactory improvement, provided the patient is not burdened by significant neurotic taint or has not developed a considerable degree of anaemia.

In persons where we find local or Anatomical Defect, by correcting the defect we can often cure the patient.

The general resistance of the patient can be much improved at the same time.

The Hydrotherapeutic, and Mechanical measures, baths, electricity, baking, massage, etc., which must be employed, can be carried out much more systematically and effectually in an institution equipped with such apparatus than in the home. There must be a complete mental diversion from business and family cares. These patients are, as a rule, depressed, so they must be kept occupied at something.

They must be kept in a cheerful atmosphere, and one must let them understand from the beginning that there must be persistence on the part of the patient.

In case the joint disturbance is far advanced, and where the tissue resistance is lowered, the progress again becomes less favourable.

In long standing cases, especially where the exact source of the toxaemia has not been definitely located, improvement is slow, even under the most favourable hygienic conditions.

There is a discouraging persistence of symptoms until the critical time is reached.

The depression of functions is so considerable that there may be a real gain in functions without an immediate and corresponding subjective improvement.

Relapses are common and discouragements frequent, but by keeping everlastingly at it the patient may be greatly benefited or a cure effected." - Dr Charles Clyde Sutter, MD in "New York Medical Journal", 24 February 1912.

The Putrefactive Products of the Intestinal Tract as an Aetiological Factor in Chronic Disturbances

"The pages of the current medical literature afford abundant evidence of the interest now being taken in the various phases of Autointoxication; its entity as an aetiological factor in diseases of various forms is being recognized more and more everyday.

To me there has seemed **a very close association between Chronic Disturbances and Intestinal Putrefactive Toxaemia.**

This is especially true with reference to the:

1. Skin.
2. Joints.
3. Nervous System.
4. Cardiovascular System.

Bacteriologists and chemists have worked out the flora of the digestive tract and the products of putrefaction caused by it.

We know that these products are absorbed and that some of them are responsible for many chronic lesions.

Faulty metabolism manifests itself in one person through disturbances of the liver and its functions; in others, the skin, the joints, or the muscles suffer; in still others it is the nervous system that gives way under the accumulation of toxic products.

In one patient there is frank evidence to be obtained by examination of the urine, and in others such evidences are entirely lacking.

There is a good reason for suspecting that the bacterial process in the digestive tract leads in one case mainly to digestive disorders, and in others, owing to a lesser sensitiveness of digestive tract itself, to better absorption of poisons and the development of more remote consequences such as:

1. Gout.
2. Arthritis Deformans.
3. Arteriosclerosis.
4. Bright's Disease.
5. Cirrhosis of the Liver.
6. Neurasthenia.
7. Anaemia.
8. Nervous Disorders.
9. Functional Disorders of the Heart and Vasomotor System.
10. Skin Lesions, etc.

The majority of intractable and Neurasthenical habitual headaches are of gastrointestinal origin, and are amenable to treatment if the alimentary tract is handled properly.

> ***"In a review of 51 patients who manifested Neurasthenic symptoms in a greater or less degree, 9 were dependent upon some disease in the Gastrointestinal Tract".*** *- Swan and Sutter, in "The Organic Basis of Neurasthenia", New York Medical Journal, 21 January 1911.*

Herter in "Bacterial Infections of the Digestive Tract", 1907, by the administrations of indol, produced in man frontal and occipital headaches, colic, insomnia, lassitude, and, after continued administration, a tendency toward neurasthenia.

So many cases of neurasthenia present evidences of faulty intestinal conditions, and so many are rapidly relieved of nervous symptoms by the correction of recognized faulty conditions, that it is proper to record intestinal disturbances as at least a probable positive factor, even if it may not be a universal cause.

It seems reasonable that a positive organic poison, such as we know to result from intestinal putrefaction, in a person whose reserve of nervous energy has been depleted, will exert a positive destructive force upon the nerve cell, that cannot be exerted by an external irritant, such as worry or purely mental distress, and when this is coupled with improper nourishment and fatigue, we have a combination which offers a rational explanation of nervous breakdown such as cannot be drawn from causes which are extraneous only.

A number of cases of neuralgia were recently imputed to the putrefactive products of the intestinal tract.

Mack in "Intestinal Toxemia", Illinois Medical Journal, September 1911, reports 2 cases of facial neuralgia, 3 cases of intercostal neuralgia, and 2 cases of sciatica, all of long duration, in which a decided result was obtained by treatment of the bowel.

> *"There are also cases of multiple neuritis, resembling alcoholic neuritis, in which alcohol can have no etiological part, but in which antecedent gastroenteric derangements are very prominent. The probability that these instances of peripheral neuritis (with the associated psychoses) are in reality due to intoxications from enterogenic poisons, appears to me considerable."- Herter in "Bacterial Infections of the Digestive Tract", 1907.*

Arthritis deformans has recently been imputed to putrefactive productions in the Intestinal Tract by Goldthwait and Brown in "The Cause of Gastroptosis and Euterptosis, with Their Possible Importance, as a Causative Factor in the Rheumatoid Diseases", Boston Medical and Surgical Journal, 26 May 1910, Marshall in "Arthritis of Gastrointestinal Origin, Its Diagnosis and Treatment",

JAMA, 26 November 1910, Cornwall in "Arthritis Deformans and Its Relation to Intestinal Putrefaction", Medical Record, 1 April 1911, myself, and others.

Exacerbations of the joint symptoms often follow definitely recognized increase of digestive or gastrointestinal disturbances, **and many cases of chronic arthritis are permanently cured by preventing the absorption of putrefactive products from the intestinal tract.**

I agree with Bishop in "Arteriosclerosis, Cardiosclerosis, and Intestinal Putrefaction", New York Medical Journal, 9 September 1911, that:

> *"The vast majority of cases of Arteriosclerosis as they occur in adult life, are due to the indirect influence of intestinal putrefaction upon the blood-vessels and nervous tissue."*

The well cared for classes eat too much rich food, take practically no exercise, use cocktails and champagne daily, and live under a strain of high, nervous tension.

Intestinal dyspepsia with digestive putrefaction is a very common occurrence in these cases; the putrefaction products are absorbed and carried to other parts of the body and, through their toxic and irritating properties, set up many of the chronic disturbances.

Gradual Process

This is probably a gradual process, starting first without symptoms, then in turn:

1. Indicanuria, and Other Products of Decomposition.
2. Neurasthenia.
3. Irritation of the Kidneys (with albumin and hyaline casts).
4. Myocarditis.
5. Tachycardia, and finally.
6. Arteriosclerosis.

Digestive autointoxication may in its turn irritate and even inflame the kidneys, owing to a too continuous elimination of intestinal poisons.

Arteriosclerosis also involves the vessels of the kidney, causing interstitial nephritis, and this in turn affects both the toxaemia and the blood-vessels by direct influence, and by raising the blood pressure.

> ***"The Arterial Blood Pressure is nearly always increased in Autointoxication,*** *owing to spasm of the arterioles. Arteriocapillary pressure is diminished." - Combe in "Intestinal Autointoxications".*

Alcohol is usually given as a cause of arteriosclerosis. It probably acts indirectly by producing disturbances of the digestive tract, resulting in autointoxication.

The management of heart diseases and arteriosclerosis pertains, in a great measure, to the regulation of food. Almost everyday we meet cases of proteid poisoning.

An extreme example of the result of abuse of protein food is seen in the case reported by Bishop in "Diet in Heart Disease and Arteriasclerosis", New Your Medical Journal, 4 March 1911:

> *"Of a young man in whom heart blood-vessel, and kidney disease have developed as a direct result of eating enormous quantities of meat. It was not uncommon for him to eat 6 chops at a meal, or 1.8 kg of beef. A very intense intestinal putrefaction developed, the products of which were absorbed into the blood, poisoning his heart so that it did not beat more than 40 times to the minute, damaging his kidneys, and poisoning his nervous system so that he was in a terrible state of nervousness and depression."*

These patients improve rapidly when given more exercise and a reduction of the proteid food in their diet to about 60 to 90 grams.

According to Metchnikoff in "Annales de l'Institut Pasteur", 25 October 1910, and "Revue de Thérapeutique", 1 March 1911:

> ***"The digestive tube is constantly elaborating poisons of microbic origin,*** *which are capable in time of setting up Physiological Arteriasclerosis."*

He also believes that the coming of senility may be postponed by the prevention of putrefaction in the intestine. **Auto Intoxication causes degeneration of the cells of the liver, kidneys, blood-vessels, and fibres of the heart muscles.**

By preventing the absorption of toxic substances from putrefaction and fermentation, the tissues and organs of the body will be relieved from the destructive irritation caused by the absorption of these toxic products, and, as a result of this and the changes incident to it, old age and death may be postponed.

> *"It was probably the obvious fact that some men are physically older than others who have lived as many years, that directed the attention of men to the study of* ***the physical causes of senility. The morbid process in the arteries commences with irritation by some abnormal substances in the blood. The first general cause we find in that decline in the sensibility and motor power of the colon incident to advancing age is lessened activity. Faecal matter collects in the large bowel and is retained beyond the normal period, and decomposition goes on unchecked; toxins are developed which are absorbed into the blood, where they irritate the walls of the vessels through which they circulate. Here we have an adequate general cause, one whose presence and capability of***

inducing the first lesions are not questioned." *- Waugh in "Arteriaselerosis", Medical Record, 23 September 1911.*

Several cases of fibrillation of the auricle have been quoted by Bishop in "Arteriasclerosis, Cardiosclerosis, and Intestinal Putrefaction", New York Medical Journal, 9 September 1911, that were apparently due to intestinal toxemia, because treatment directed against the existing excessive intestinal toxemia was of benefit in these cases.

Symptoms simulating heart lesions may be produced by gastric disorders, thus ulcer, chronic ectasy, and chronic gastritis may produce tachycardia or arrhythmia.

Tachycardia with acute dilatation of the stomach, especially with existing heart lesions, is of rather frequent occurrence.

In one case of tachycardia, with valvular lesion, the patient was confined to her bed, and was told by her family physician that she had but a short time to live. Upon examination marked dilatation of the stomach, with excessive gastric fermentation, was found.

Treatment directed against the gastric fermentation was of great benefit in this case. Within 6 weeks the patient could walk one mile on the level, and at the end of 18 months could walk from 2 to 3 miles daily. I have also seen many cases of cardiac irregularity that were without doubt due to intestinal toxemia.

Attacks of tachycardia in these cases were almost always preceded by gastrointestinal disturbances, and treatment directed against the chronic excessive intestinal toxemia usually prevented or cut short the attack.

Many of these patients were able to foretell an approaching attack by an increase in their gastrointestinal symptoms.

Stengel in "Treatment of Cardiac Irregularities and Cardiac Weakness, Pennsylvania Medical Journal, May 1911 says:

"The extrasystolic type of irregularity is frequently of no consequence, and rather more often is this the case in those instances in which the patient is very conscious of irregular action. In these cases it is not infrequently dependent upon some gastrointestinal disturbance, the overuse of coffee or tobacco. and other easily remediable conditions."

He emphasizes:

"That ***in very many cases of beginning failure of cardiac power we had better devote attention to the gastrointestinal*** *tract and external conditions, and give the heart a chance."*

In the pathogenesis of cirrhosis of the liver, alcoholism has been assigned much importance, but, while alcohol produces fibrous changes, it is far from being the only cause.

Many patients are not alcoholic, and we must therefore search elsewhere for the cause of cirrhosis. This cause appears to exist in the poisons derived from fermentations and putrefactions in the gastrointestinal tract.

Alcohol may be an indirect cause of cirrhosis through disturbance of digestion causing putrefaction. Boix quoted by Dieulafoy in "Textbook of Medicine", I, p. 893, by causing the ingestion of butyric acid, was able to induce, in rabbits, Laennec's atrophic cirrhosis; by the ingestion of lactic and valerianic acid, cirrhotic lesions.

The ingestion of acetic acid produced even more fibrous lesions in the liver. Analogous results have been obtained with living cultures and with the toxins of Bacillus coli.

> *"The very interesting researches of Boix, prove that the organic acids of digestion may produce hepatic cirrhosis, some more easily than others. In the normal state the liver resists these daily poisons. If it grows feeble, or if it is already weak,* ***the toxic action takes place, and hepatic cirrhosis by autoinfection of a gastrointestinal origin supervenes."*** *- Hanot, quoted by Dieulafoy in "Textbook of Medicine", I, p. 893.*

> *"In 389 personal observations, dilatations of the stomach. I have found that swelling of the liver is seen in the proportion of 23%, and in or der to prejudge nothing, I have given to this change the name of enlarged liver." - Bouchard, quoted by Dieulafoy in "Textbook of Medicine", I, p. 893.*

It is well known to clinicians that, in some individuals, **ingested toxins absorbed in the alimentary canal show the chief evidence of the absorption by changes in the skin.**

Faulty metabolism is recognized as a cause of many diseases; it might affect all the body tissues, and it is natural to expect that the skin also participates.

There is abundant evidence that the cellular derangements which constitute the bottom fact in the skin lesions have an intimate connection with and dependence upon metabolic errors.

Duhring in the American Dermatological Association Meeting, Washington, May 1910 said; that this subject of **metabolism, in relation to diseases of the skin**, had interested him for many years, and he had long since ceased to study and treat the diseases of the skin, as he did years ago, from the standpoint of the lesions alone.

Some persons have an idiosyncrasy to strawberries, champagne, etc., and in them develop therefrom poisonous substances which produce eruptions, associated at times with acute gastric symptoms.

Common acne and acne rosacea, the seborrheic eczemas, eczematous impetigo of children, erythema, urticaria, pruritus, and furunculosis seem to be due chiefly to intestinal autointoxication.

Psoriasis and Pemphigus are also attributed to this cause.

Intestinal toxemia is without doubt the predetermining cause in many cases of catarrhal inflammation of the mucous membranes that has become extreme and chronic, the most important of which are mucous colitis, disturbances of the nasal mucous membranes, and catarrhal otitis media.

This seems probable when we realize that gastroenteric toxins seem to have a special affinity for vasomotor centres.

These cases should be called autotoxic instead of catarrhal.

The modus operandi may be through the:

1. Blood Stream,
2. The Sympathetic and Vasomotor Systems, or
3. The Lymphatic System.

Frequent and repeated congestion of the pharynx and tonsils in the recurrent forms have been often noted in my observations in cases of autointoxications.

Woods in "Autointoxication and Allied Intestinal Troubles as a Possible Cause of Certain Vascular and Functional Disturbances of the Eye", JAMA, 13 August 1910 thinks it possible that there is enough association between such eye disturbances as blepharitis, lid and conjunctival disturbances, conjunctival hyperemia and functional disturbances of the ciliary muscle, refraction and muscular errors, etc., and manifest symptoms of autointoxications from constipation, to justify the belief of causative relations.

The opinion of the Woods, and of those who discussed the paper was, that many of the intractable ocular lesions, those which did not yield to treatment, were certainly due to absorption of toxins from the intestinal tract.

Many cases of asthma improve, following the removal of the intestinal toxemia.

Henoch, Silberman, Oppler, Boas, Murdock, Einhorn, Combe, and many others recognize a disease known as dyspeptic asthma.

In all cases there is acute dyspepsia due to some error in diet. With some patients the asthma is accompanied by urticaria, and always results from the ingestions of the same foods (strawberries, etc.).

This led Combe (Intestinal Autointoxications) to regard digestive asthma as an internal urticaria, In many cases of excessive saccharobutyric putrefaction, anaemia is present, sometimes presenting the blood picture and clinical characters of the progressive pernicious type.

In some instances we can exclude other causes of anaemia, such as malaria, syphilis, and intestinal parasites.

The onset of anaemia is usually very slow. It is first manifested by indications of a decreased volume of blood with out any decided fall in the percentage of hemoglobin, and later in the red blood cells, so that a moderate or considerable grade of secondary anaemia may be associated with the intestinal conditions.

The occurrence of a considerable degree of anaemia in any case of advanced saccharobutyric putrefaction, must depend upon an excessive destruction of red

blood cells compared with the reproduction of such cells.

Sooner or later, a definite and increasing disproportion arises between the destruction and reproduction of red blood cells, and under these circumstances there arises a slowly or more rapidly progressive anaemia.

Hoxie in "The Blood Picture of the Autointoxication Due to Chronic Colonic Stasis", JAMA, 18 May 1912, states that "when studied with Wright's stain, the polynuclears show an increase in the proportion of cells, showing large ambophilic granules, so much so that the observer is struck with the "dark" appearance of the protoplasm, that is, the granules are large and purplish and seem to lie in a mauve cytoplasm.

The proportion of these heavily staining cells decreases as the patient gets rid of the toxins.

Hence, one can estimate rather closely how intoxicated the patient is by the proportions of these dark cells to the total number of polynuclears."

A feature of chronic excessive intestinal putrefaction is the readiness with which fatigue comes on. In children this is manifested by languor, restlessness, lack of concentration, and lack of interest in play.

They are not much retarded mentally, except in so far as they miss opportunities for conventional learning.

Sometimes one can notice a sharp contrast between the wit of these children and their physical retardation.

Instances of typical progressive muscular atrophy, epilepsy, paresis, and transient heart block are recorded, in which there are also pronounced evidences of excessive intestinal putrefactions and which **have been benefited or cured by rational treatment of the bowel.**

Amenorrhea (absence of a menstrual period), Dysmenorrhea (painful periods or menstrual cramps), Menorrhagia (menstrual period with excessively heavy flow), and Leucorrhea (thick, whitish or yellowish vaginal discharge) have been recognized by some as showing a relationship to autointoxication.

In addition, we may also add the following diseases as having an underlying chronic excessive putrefaction as an obscure aetiology:

1. Convulsions in children.
2. Melancholic States.
3. Excessive Emotional Depression and Irritability.
4. Mental Confusion.
5. Degenerative States of the Nervous System.
6. Mental Fatigue on Slight Exertion.
7. Loss of Sexual Power.
8. Debility.
9. Insomnia.
10. Many High Blood Pressures.

The 12 cases reported by Cornwell in "Chronic Putrefaction Toxemia of Intestinal Origin", Medical Record, 23 December 1911, showed the following conditions:

"1. Severe and frequent or continuous Headaches
2. Mental and Physical Debility
3. Neurasthenia
4. Functional Disorders of the Heart
5. Irritative Cough, Glycosuria
6. Severe Chronic Universal Eczema
7. Toxemia of Pregnancy
8. Arthritis Deformans
9. Irregular Fever
10. Cardiovascular Disease
11. Nephritis

The beneficial results of dietetic treatment were, on the whole, so striking that they suggest the general conclusion that **chronic putrefaction toxaemia of intestinal origin causes or aggravates a large number of common and important morbid conditions."**

Some individuals, being more fortunate in their resistance, are able to withstand the constant absorption of toxic products for many years before they eventually succumb; others more susceptible seem almost to fade away before the increased cell destruction.

Clinical Observations

In this paper I have but briefly alluded to the diseases which, in some instances, were apparently due to the absorption of putrefactive products in chronic excessive intestinal putrefaction. This is by no means the only cause of these chronic disturbances, but it is an important factor in many and the sole cause in some of the chronic disturbances, and should be given greater prominence.

The quantity of toxins produced does not determine the amount of disturbance which will follow, but it is the quantity of toxins absorbed which is important.

The quantity absorbed may not cause pathological disturbances, providing the system of defence is not weakened, or the amount absorbed does not exceed the limit of Nature's power of defence against these poisonous products of the intestinal tract.

The amount which has passed the line of defence may not be of pathological significance if the organs of elimination are functioning properly.

The products carried into the circulation unaltered may not be directly responsible for the chronic disturbances, but through irritation of the channels of elimination may be the first link in the chain.

We observe, on the one hand, an increase in the phenomena of putrefaction, on

the other, a diminution of the defence of the organism; both of which contribute to produce and augment intestinal autointoxication. Nature has produced a powerful system of defence against intestinal toxins.

> *"The digestive fluids neutralize digestive toxins; the intestinal epithelium plays an antitoxic role; blood returning from the intestines is obliged to pass through the liver, the epithelium of which is endowed with mighty toxicolytic power; antitoxic glands, thyroid, thymus, suprarenal, the zymases of which modify and neutralize certain toxins of intestinal origin which circulate in the blood; finally, the eliminating organs constantly reject and throw out the products of intestinal putrefaction. Ammonia and acetone are eliminated through the respiration; the skin throws out with the sweat, indol, phenol, and sulphoethers: last, the kidneys eliminate through the urine the majority of the intestinal poisons." - Combe in "Intestinal Autointoxications", 1910.*

Combe asks why we have this system of defence unless the products are harmful, and why the eliminating organs constantly reject and throw out the products of intestinal putrefaction, if these are harmless? If these products are harmful, then what will be the result if the system of defence becomes weakened, or if the products become excessive?

The liver destroys about 2/3 of the poisons of digestive origin, but what must happen to the poisons when the liver is diseased?

Disturbances from putrefaction toxemia also depend to a large extent upon tissue resistance or susceptibility. This varies greatly in different individuals, so that an amount of putrefactive toxemia which is harmless to one individual may produce serious disease in another.

The tissue resistance will determine the location and type of disturbance which will follow, thus, in one case the toxemia may be the aetiological factor in chronic arthritis, and in another case the same product of putrefaction may manifest itself in skin lesions, arteriocapillary fibrosis, Bright's disease, cyclic vomiting, cirrhosis of the liver, nervous and mental disturbances.

> *"In some persons the indulgence in a single glass of champagne is followed within 24 hours by manifestations of gout; in others champagne causes headache and the excretion of increased amounts of uric acid." - Herter in "Bacterial Infections of the Digestive Tract", 1907.*

In arthritis deformans, degenerative changes are quite frequently found in the cornea.

This leads one to suspect that there is a susceptibility, or lowered resistance, also in the synovial membrane, which determines the onset of joint symptoms.

We may know that patients of a certain group are alike in having intense indicanuria, but we cannot say but that the intoxications may be different in these

cases, owing to differences with respect to the absorption of substances other than indol.

Instances are many in which clinical experience has made it clear that two persons of approximately the same weight react differently to the same drug, and do so regularly. Of individual human susceptibilities and reactions to the actions of enterogenous poisons, one cannot fail to recognize the possibility that such individual susceptibilities and reactions may play an important part in determining the clinical manifestations of intoxications.

The general disturbances are not always caused directly by the toxemia, but indirectly through disturbances of metabolism, Bright's disease, and vasomotor disturbances. The symptoms, as learned from the patient, are not of great value, the onset has been so insidious that what the patient complains of is often the result rather than the cause.

Symptoms of autointoxication become manifest only when the system of defence through the intestinal mucosa, liver, etc., becomes weakened, or has not sufficient strength and quantity to keep the bacteria of the lower bowel under subjection.

These bacteria seem to have been designed by Nature to complete the process of digestion, depending upon the inhibitory influence of the glands above to keep the proper balance.

Digestive Auto-Intoxications

We can often recognize the presence, and possibly the degree, of intestinal putrefaction, but the results obtained give no definite indication of the degree of autointoxication which may be present, **as different putrefactive bacteria produce different products, some of which are comparatively innocuous, while others are excessively poisonous.**

The chemical sign of intestinal toxemia of putrefactive origin that has attracted the most attention, is the presence in the urine of indican, or indoxyl potassium sulphate.

Indican is usually present, but not necessarily so, and its presence or its amount does not determine the degree of putrefaction or bear a relationship to the amount absorbed.

A large amount of indican in the urine or faeces shows that a large amount is being eliminated, but does not show how much is present in the circulating blood.

These substances are exceedingly variable in number, combination, and quantity, depending upon the character and amount of foodstuffs ingested and upon variation in digestion.

Normally, the sulphoethers may be regarded as an index of intestinal nitrogenous putrefaction, because they are derived only from the microbic, nitrogenous putrefaction. They are produced at the expense of proteids, the nucleoalbumins, the pancreatic and intestinal juices, the bile, and the intestinal mucus.

According to the research made by Baumann in "Zeitschrift fur Physiologie", xvi, p. 221, quoted by Combe, Intestinal Autointoxication), Nuttall and Thierfelder in "Zeitschrift fur Physiologie", xxiv, p. 71, quoted by Combe in "Intestinal Autointoxication", the quantity of sulphoethers in the urine is proportional to the intensity of the putrefactive processes in the intestine, the exception being in organic suppurations and infections, in which the bacteria destroy the albumin in the same manner, and in persons using salol and phenol.

The Leucomaines and Ptomaines are considered to be toxic, and are often etiological factors in chronic disturbances from autointoxication.

> ***"It may be safely assumed that when the absorbing intestinal toxic substances, Leucomaines and Ptomaines, resulting from normal digestion, are found in abnormal amounts, autointoxications occur. If these substances enter the circulating blood rapidly and in sufficient quantity, acute intestinal autointoxication is the result; this often assumes the nature of bilious attacks or migraine in the course of the chronic variety, or it may follow obstinate constipation."*** *- Anders in "Archive of Diagnosis", April 1909; quoted by Wood, Gastrointestinal Autointoxication and Mucous Enterocolitis from the Viewpoint of Surgery.*

Leucomaines and Ptomaines

The Leucomaines are derived from the Cells and the Ptomaines from the Bacteria.

Ethereal sulphates, sulphuretted hydrogen, which is normally present in traces in the colon, ammonia, the amidoacids, indol, skatol, phenol, and aromatic oxyacids, may not be sufficiently toxic to affect the healthy person, but would affect those whose power of defence was weakened, whose tissue susceptibility was increased, and those whose nervous system was depressed.

It is possible that, even in the absence of any increase in the production of toxic substances, **slow passage of faeces through the intestines might lead to autointoxication by giving more time for the absorption of products of bacterial decomposition.**

The diagnosis of autointoxication as the aetiological factor in many cases of chronic disturbances, can easily be made by the clinical manifestations, but in the more obscure cases we must have recourse to more demonstrative proofs by examination of the urine, blood, and faeces.

The affection is not always accompanied by a precise and defined symptomatic picture. Some cases are characterized only by disorders of general nutrition, anaemia, nervous phenomena, cutaneous eruptions, and obstinate constipation.

Variable and multiple symptoms may take place without the patient complaining of his digestive apparatus. Many times the diagnosis will be made by placing the patient on anti-putrefactive treatment.

If we keep in mind the fact that gastroenteric toxins seem to have a special affinity for Vasomotor Centres it will aid in making a diagnosis.

Laboratory methods may give us an index to the amount of toxic substances present in the gastrointestinal tract, but it does not inform us of the type which is being absorbed, or of the relation of the quantity to the system of defence, the power of elimination, or to the tissue resistance or the individual susceptibility, all of which are essential to a correct and complete diagnosis.

The Important Factors Favouring the Production of Intestinal Putrefaction:

1. Impaired Metabolic Processes and Error in Diet. On a proteid diet the stools are neutral or alkaline, and contain ammonia, fatty volatile acids, ptomaines and leucomaines, aromatic oxyacids, phenol, and indoxyls, etc. On a carbohydrate diet these substances are greatly reduced in amount or are entirely absent.

2. Numbers of bacteria are taken into the digestive tract with the food, and from nose and throat disturbances. In a normal stomach these putrefactive bacteria are quickly disposed of, but in cases of chronic excessive intestinal putrefaction the secretions are altered and may permit the passage of putrefactive bacteria unharmed.

3. Obstinate Constipation. Mere obstinate constipation does not necessarily lead to indicanuria. In a certain number of patients with chronic intestinal disturbances, there seems to be a sufficient regularity in the bowel evacuations, and yet further analysis indicates in them conditions similar to those of others suffering from a positive intestinal stasis. One class of patients with nervous symptoms traceable to intestinal conditions may be hearty eaters, another may be very careful and abstinent; they suffer equally from the intestinal disturbances. The longer the time during which the intestinal contents are exposed to putrefactive bacteria, the greater will be the putrefaction, but this does not necessarily mean greater absorption of the products of putrefaction.

4. Delayed absorption. Early absorption removes the digested food before it becomes the prey of putrefactive bacteria.

5. Insufficient mastication, improperly cooked food, food partially decomposed, or food containing preservatives. Preservatives may not be harmful per se, but by delaying digestion and subsequent absorption, may give time for an excess of putrefaction and fermentations.

6. The number, character, and activity of the saprophytic bacteria. These are increased in number and virulency by stasis of the faecal content and by alterations in the bile, gastric, and pancreatic juices which have an inhibitory influence.

7. Reactions of the contents of the intestines. Anaerobic albuminous putrefaction cannot take place in the small intestines and is very limited in the large intestine when the contents are normally acid.

8. Disturbances of the abdominal organs, such as gastroptosis with or without coloptosis, kinking, redundant or ptosed colon or sigmoid, chronic appendicitis

and partial or complete occlusion of the common bile duct, with or without jaundice.

The Amount of Toxins in the Blood Depends Upon

1. Conditions of the intestinal mucosa. Indican is observed in affections of the small intestines, accompanied by diarrhoea, such as typhoid fever, tuberculosis, catarrhal enteritis, and cholera, but is not present in dysentery or mucoenterocolitis, both of which are accompanied by exaggerated peristalsis and increased intestinal putrefaction, with diminished absorption. This can probably be accounted for by the fact that in the former group of diseases the line of defence is broken, allowing greater absorption.
2. Activity of the liver, thyroid, thymus, and suprarenal glands which possess toxicolytic power.
3. Activity of the organs of elimination, the kidneys, the skin, and the lungs.

The Amount of Disturbances in the Body Depend Upon

1. The degree of toxicity of the putrefactive products of the digestive tract which have been absorbed and have passed the line of defence unaltered.
2. The period of time through which tissues have been exposed to the action of these products.
3. Tissue resistance, or individual cellular reactions.
4. The presence of diseased tissue or organs. The products absorbed may not be sufficiently toxic, nor the amount sufficiently large to affect a healthy per son, but they will exaggerate existing diseased conditions.
5. The activity of eliminating organs which will rid the system of these deleterious substances before they produce harmful results.

Indications for Treatment

In all chronic disturbances one should ascertain whether chronic putrefaction toxemia is an important etiological factor.

If present, it should be removed by regulation of the diet, favouring absorption, correction of altered secretions, correction of malpositions of the abdominal organs, and preventing intestinal stasis; stimulating the action of the antitoxic organs; increasing the power of the organs of elimination; and, finally, treatment of the lesions produced.

By a combination of all these factors, many chronic disturbances, caused by or exaggerated by chronic putrefaction toxins, may be prevented or cured." - Dr Charles Clyde Sutter, MD in "New York Medical Journal", 28 Sept., 1912.

Chronic Rheumatism

"Chronic Rheumatism has as its chief cause "a toxaemia from some bacterial infection in the body".

The discovery of focal auto-infection as an important aetiological factor, and in a large percentage of cases the main cause of the disease.

Rheumatism

Classification is:

1. Acute and sub-acute rheumatism, "rheumatic fever"
2. Chronic Rheumatism, comprises:
   a. Non-articular manifestations of rheumatism, or rheumatic fibrosities.
   b. "Rheumatic Arthritis" i.e., types of the disease characterised by chronic joint changes.

The frequency of occurrence of heart complications, of manifestations of disturbance of the nervous system, skin, throat, lung complications, showed that Acute Rheumatism was something more than a mere febrile disturbance associated with acute joint inflammation.

Acute and sub-acute Rheumatism are now regarded as a disease due to a definite bacterial infection in which there is great danger of the heart being attacked either in the form endocarditis, myocarditis or pericarditis, also any of the many manifestations of acute rheumatism such as subcutaneous nodules, skin rashes, tonsillitis, pleurisy, pneumonia, hyperpyrexia (very high fever temperature equal or greater than 40° C), rheumatic chorea, etc., may develop.

In Chronic Rheumatism the toxaemia causing the joint and fibrous tissue manifestations is sure to cause other general symptoms of illness such as:

1. General Weakness
2. Anaemia
3. Gastro-intestinal Disorders
4. And other disturbances

These should be carefully looked for and their existence should be borne in mind in the treatment of the disease.

1. The non-articular manifestations of Chronic Rheumatism (Fibrositis) include:

a. Inflammatory conditions of fasciae and aponeuroses such as Muscular Rheumatism, Lumbago, etc.

b. Inflammation of tendons and ligaments such as stiff neck, tenosynovitis,

tender heels due to involvement of the plantar fascia, Dupuytren's contractures (one or more fingers become permanently bent in a flexed position) of the palmar fascia.

c. Local perineuritis as in sciatica, brachial neuritis.

d. Bursitis.

e. Other manifestations such as Heberden's nodes (hard or bony swellings in the joints of the fingers and toes), finger pads thickening and fibrous deposits in the subcutaneous tissues.

The Ministry of Health in their Statistical Report selected 3 groups as descriptive of the above:

a. Muscular Rheumatism
b. Lumbago
c. Sciatica and brachial neuritis, as being most easily classifiable

2. "Chronic Joint Changes" or "Arthritis"

The Ministry of Health decided that a convenient classification for statistical purposes was Rheumatoid Arthritis (including infective peri-arthritis):

a. Osteo-Arthritis
b. Gout
c. Unclassifiable Chronic Joint Disease

At the Derby Division of the British Medical Association in February 1921, I expressed the opinion that all the above-mentioned manifestations of Chronic Rheumatism were due to the same aetiological factors.

Dental Sepsis

Dental Sepsis has been computed to be a most important aetiological factor in over 50% of cases of Chronic Rheumatism.

Capillary Stasis

There is strong evidence that a part at least of the pathological changes in rheumatism consist of an interference with or an obstruction to the blood flow in the finer capillary beds, **in other words, capillary stasis is present.**

Before Care Treatment

The seeds of Rheumatic Disease are often laid early in life, unhealthy conditions of the throat and nose, teeth or alimentary tract lead to chronic infections, the toxaemia from which may lead to the development of rheumatic trouble in later life." - Sir William Willcox, MD, FRCP in "Chronic Rheumatism", Journal of the Royal Sanitary Institute, Vol. 48, 1928.

The Treatment of Arthritis

"Unless foci of infection are removed or treated, diets corrected, proper rest and habits of living established therapeutic measures are simply measures used for comfort, and even the latter is not always obtained.

The necessity for rest following treatments cannot be stressed too emphatically.

Fatigue, always present to a marked degree, must not be accentuated.

Systemic heat should never be used while patients are undergoing various other therapies or are on a restricted diet. The frequency of systemic heat should be based upon the individual patient's needs. Local heat may be used once or twice daily. Both improve the metabolism and increase the circulation to the parts treated.

The local form is sometimes used before massage or effleurage to further aid in drainage through the vascular system or lymphatics.

Massage is very valuable in the rheumatoid syndrome, depending upon whether an effect is desired locally or in a more remote locality. **It has an effect upon both the finer and deeper circulation and the lymph drainage.**

Massage has great value as a form of exercise for arthritics with the fatigue factor at a minimum.

This valuable form of therapy may be used to prevent atrophy of muscles; improve local and general metabolism; increase local circulation; and finally help to remove edema from the dependent parts in the arthritic.

Massage may produce as well as relieve pain in the muscles of arthritics.

Thus, the advisability of individualizing its application is evident.

Much harm and trauma is often caused through the manipulation of joints which have already become pathologic.

Exercise is another form of physiotherapy used in the management of the non-tuberculous arthritides. Its early use is more important in the atrophic than the hypertrophic form.

A desirable goal for arthritics would be participation without fatigue in some moderate form of exercise. Passive motion is indeed beneficial, but its beneficial effect upon the heart and lungs is not as marked as that of normal exercise.

A patient who has reached the point where he can participate in exercise usually shows a marked change for the better in his psychology.

The latter is one of the most important steps in his struggle toward rehabilitation.

Postural exercises are very important in the correction of faulty body mechanics acquired in early childhood or as a result of the disease itself.

This correction of posture has a beneficial effect upon certain important organs, as well as upon body functions. Through the use of abdominal exercises, bowel function may be improved. The action of the abdominal muscles and the diaphragm is responsible for this, due to its effect upon the finer circulation.

There is small excuse for deformities developing in any case of arthritis as a result of faulty posture incidental to the disease.

Correct posture should be particularly stressed in cases of spondylitis in order to prevent the establishment of habits which, if allowed to persist, might lead to ultimate helplessness.

After ankylosis (the deposit of too great amounts of calcium in portions of the structural body; hands, wrists, elbows, shoulders, feet and toes, ankles and knees) has taken place in the atrophic form, it is too late to attempt the correction of posture.

It is essential that correction be made gradually in order to minimize the resulting discomfort to a bearable degree and to maintain the patient's morale. As his posture approaches normal, his general health, together with important body functions, will improve.

Heliotherapy (natural sunlight) and Diathermy (heat in the body by electric currents) have their places in the treatment of arthritis as physiotherapeutic agents, the former being useful in cases with a secondary anemia present; the latter agent is sometimes used to generate heat within the tissues.

Rest

Rest is important from the standpoint of physiotherapy. Patients who are quite meticulous in carrying out other more difficult measures, frequently err in neglecting the simplest-rest-and thus negate the benefits of expensive treatment.

Rest holds the same relative importance in relation to the cure of arthritis as it does in the cure of tuberculosis.

Rest is important after all treatments, for it is so obviously the most important preventive of fatigue. In addition, rest contributes its share in the benefits to be derived from the treatments.

Many cases of arthritis at first may require absolute bed rest.

Later when the case becomes an ambulatory one, rest periods of from 1 to 2 hours in mid-afternoon and mid-morning are essential during a period of months. “Fatigue should never occur”.

Focal infections

“The importance of a medical understanding of the individual as a whole precedes the removal of focal infection”. - Dr Pemberton, Ralph, MD in “Arthritis and Rheumatoid Conditions their Nature and Treatment”.

More benefit may be derived from the various treatments when the body reserve is not gradually acted upon by foci of infection. One should no more advise a prostatectomy for prostatitis than a tonsillectomy in elderly patients for diseased tonsils.

We have seen many foci clear up entirely through local treatments, i.e., prostatic massage for prostatitis; local sterilization in some cases of diseased tonsils; gall-bladder drainage for cholecystitis; local treatment for sinusitis, and so on.

This is especially true when the patient has been placed on a program of rest, proper diet, possibly physical therapy, and adequate bowel function.

To remove any infection one must consider that nature has already established a barrier of inflammatory tissue for defence.

When the infection, whether diseased tonsils or infected teeth, is removed, there is usually an unavoidable amount of trauma caused and a breaking down of this natural defence.

Thus marked danger lurks in an undue amount of absorption of toxins, or of the organisms, which may take place with more intensity and with graver consequences than before.

To remove focal infections in the later stages of arthritis is not only without benefit but may be very dangerous.

The consideration of foci of infection should take place in both types of arthritis for already established obvious reasons.

A correction of diet is appropriate. Many so-called intestinal cases showing dilated, reduplicated, and ptosed colons with lack of haustral markings are very graphically benefited by means of supplying a balanced ration adequate in greens, vitamins, generous fats and proteins, but a marked reduction of carbohydrate.

George R. Minot (Medical Clinics of North America, Vol.15, No.4, 1932) has found in the treatment of his patients with pernicious anaemia where an excess-carbohydrate-ration was used that many of his cases developed Arthritis.

Physical Therapy

Physical therapy is one of the oldest methods used in the treatment of the arthritides; that it was extensively employed by the early Greeks and Romans is evidenced from the numerous spas uncovered by archaeological excavations of the ruins in those ancient countries.

The popularity of the spas of Europe and the springs in the United States is due not so much to the healing qualities of their waters, but, more often, to the fact that they are usually administered in conjunction with baths, exercises, douches, etcetera, which are ordinarily coupled with the valuable adjuncts of heat and massage.

Through the studies of Pemberton and his associates, one would expect a derangement of function because of the derangement of the "finer blood supply to various parts of the body."

This occurs in both types of arthritis. There is a closure of many capillary beds.

This may be demonstrated in viewing the capillary fields of the fingers in arthritic patients by means of the Lombard method.

When one considers cold and leaky hands and feet, with the surface temperature at the extremities at least 2 degrees C. below normal, it is scarcely necessary to stress the importance of heat as a therapeutic agent, whether the heat be of the wet or dry variety. (JAMA, 3 Jan 1931)

Few cases of arthritis can be treated properly and eventually cured without the use of some form of physiotherapy.

Dry heat may be used in a very simple form. We may employ numerous electric light bulbs, or wet heat in the form of Epsom salt soaks, or even hot baths.

Results may be obtained from even the most crude forms of apparatus, but the physiological effects remain the same.

One must remember the potential dangers such as alkalosis and tetany which might develop as the result of the improper prolonged use of heat.

Systemic heat is a great metabolic whip when used at the proper time, and certainly increases the circulation to the parts in a more lasting and efficient manner than do various drugs.

Among the forms of dry heat are the electric baker, electric cabinet, and hot air bath.

Types of wet heat frequently used are thermal springs, magnesium sulphate soaks, hot packs at 82 degrees C., steam baths, mud baths, and whirlpool baths." - Theodore Franklin Bach, MD in "The American Journal of Nursing", Volume XXXII, June 1932.

Chapter 67

Blood Cures Disease

"But flesh with the life thereof, which is the blood thereof." - Genesis 9:4

"The life of the flesh is in the blood. It is the life of all flesh. The blood of it is for the life thereof. For the life of all flesh is in the blood thereof." - Leviticus 17:11,14.

"Then there comes a tertium quid (unidentified third substance), which seems to be necessary to produce the outbreak of convulsion. This is found in the blood, which, carrying elements that ought to be excreted by the kidney or other Emunctories, to the nervous centres, by some mode of irritation excite the convulsion. We may trace a similar process in the albuminuria and convulsion that sometimes complicate scarlatina, and in other forms of acute albuminuria. But nowhere except in pregnant women can we observe all the stages of a pathological struggle so closely and completely, from the moment of departure from health to complete recovery. Illustrations of the history of other forms of convulsions are numerous and instructive. Chorea, for example, must be studied through its relation to menstruation and pregnancy." - Dr Robert Barnes, MD, FRCP in "Address In Obstetric Medicine", The British Medical Journal, 18 August 1877.

"Mercier in his Textbook of Insanity, states:

"By far the most important of the direct stresses which contribute to the production of insanity is alteration in the composition of the blood by which the highest nerve regions are nourished. More potent even than attenuation of the nutritive supply to the brain is its vitiation. By introducing a poison into the blood, we can produce insanity at will. Proof of these statements is exhibited by every case in which ether or chloroform is administered, by every case of drunkenness. Another of these poisons is carbonic acid gas whose intoxicating effect is seen in the delirium of heart disease. Also substances so complex as the toxins produced by the specific organisms of zymotic disease. They include foreign substances introduced into the body from without, as well as toxins produced within the body by variation of its own metabolism, and, perhaps most deadly of all, toxins produced by co-operation of foreign agents and bodily processes."

Lewis A. Conners, in Vol. I of the "Reference Handbook of Medical Sciences", says:

"Among the abnormal products are to be distinguished those which under normal conditions would promptly undergo further change, and those which in the healthy organism are never found or are present only in minute quantities. While certain organs are occupied in manufacturing poisons, certain others are busily engaged in arresting these poisons and excreting, or in converting them into useful or harmless bodies. Upon these organs of defence, then, rests the responsibility of so disposing of these constantly forming poisons of the body that the latter is protected from their deleterious effects. And this these defensive organs are capable of doing where all of the bodily functions are acting normally and when no excess of noxious matter is introduced from without. The adjustment, however, is so delicate that a functional derangement of any one of the organs may suffice to permit of the accumulation in the blood of enough toxic material to give rise to systematic disturbances of an acute or chronic nature, in other words, to auto-intoxication." - Dr L. Vernon Briggs, MD, Physician to the Mental Department Boston Dispensary, in "The Boston Medical and Surgical Journal", 5 January 1905.

"I have given this subject quite a little thought; It is not in the Alimentary Canal alone that we find evidences of Auto-Intoxication, it is in the Blood. Over-eating is not going to be remedied by drinking spring water. You have got to get the circulation cleared. Use the organs that nature has provided for the elimination of wastes and poisons: Skin, Liver and Kidneys. The liver is the great secreting organ, it is the great driver. Get normal functional action in the liver and kidneys. What is needed in the average case is a good clearing out." - Dr Peck, MD in "Vermont Medical Monthly", 15 December 1910.

"One cause for all disease and weakness. All human ailments, with the exception of highly infectious and contagious diseases, are traceable to one cause: Imperfect Circulation and Impoverished Blood." - in "The Marvel Violet Ray Book", 1920.

"Impoverished blood and ptomaine poisons not only weaken sensitive nerves but affect the brain itself. Poisons should not be permitted to generate in the body, and through the circulation be carried to every nerve and cell. This may be prevented by using only a rational diet, avoiding indigestion and keeping the abdominal tract free from all engorgements by frequent cleansings with pure water. Congested blood vessels are a product of weakened nerves, through exposure, and of engorgement of the stomach and bowels, as a consequence of a wrong dietary, resulting from improper food and overeating, causing indigestion, constipation, torpidity of the liver and derangement

of the kidneys, thus impoverishing the blood and rendering it impossible for the brain to do its work. Hence, there are headaches and neuralgic pains and a long train of ills, and, in some instances, prostrating and fatal issues follow in their wake." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, Md., in "The New and Scientific Treatment of Chronic Diseases", 1914.

"The principle contaminant of the blood stream is the gastrointestinal track, thus the imperative need to keep it clean." - Rui Alexandre Gabirro

About a Particular form of Mental Disorder combined with Multiple Neuritis

"The etiology of multiple neuritis, and the author refers to the fact that in the beginning of the year 1887 he advanced the theory that in addition to the poisons that get into the body from the outside and cause neuritis, this may also arise from poisons developing in the body itself, ptomaines and leucomaines.

The views of Rosenheim and Leyden on the origin of multiple neuritis are given, together with those of the French authors, Bouchard, Charin and Roger.

In any disease where the eliminative powers of the body are reduced we may get auto-intoxication from the accumulation of the ptomaines and leucomaines, multiple neuritis, and together with this Korsakoff's cerebropathia toxaemica.

This has developed in glycosuria, in pyaemia, in tuberculosis, in pyaemia, and after typhoid, after the birth of a foetus that had undergone decomposition; in this latter case there were absolutely no phenomena of putrefaction to be found on the genital apparatus but the disease had apparently developed directly through absorption of ptomaines in the blood.

In the cases cited numerous instances are given which point to the abnormal constitution of the blood; one case developed in connection with leucocythaemia, another in a liver disease, a third with the breaking down of a neoplasm.

Korsakoff would ascribe to the Ptomaines or Leucomaines resulting from the activity of the tubercle bacillus in tuberculosis the physical disturbance so frequently found in this disease, contrary to the view of Wood who would account for the disease simply by the great exhaustion produced.

In view of all these facts Korsakoff calls the cerebropathy described a toxaemic cerebropathy, since he assumes that all cases of this disease stand in connection with some one toxaemia.

In individual cases the fundamental toxaemia influences the peripheral nerves alone, in other cases it affects the cord and in still others the brain.

These latter cases being the ones in which the mental disturbance is produced.

Why in the one case the affection is confined to the peripheral nerves while in another case the brain? Apparently this depends on the affinity of the poison circulating in the blood, and in part on the dissimilar powers of resistance of the

nervous system in different men. The fact that physical disturbance in question has been observed to be especially frequent in multiple neuritis of alcoholic origin may well be conditioned on the fact that the brain has become particularly susceptible through the drinking of alcohol. The nature of the poison circulating in the blood also apparently has something to do with this difference, for while there is almost always a disturbance in alcoholic multiple neuritis, yet in the neuritis after diphtheria there is no known case where a psychosis has developed.

The Lymph

In his earlier work on alcoholic neuritis Korsakoff explains this excessive vulnerability of the brain through an apparent alteration of the lymph apparatus in general, and especially of the connective tissue, this alteration establishing itself in the nervous system in alcoholism, and in consequence each accumulation of toxic products in the blood or lymph leads much quicker to poisoning than in normal conditions.

This explains why multiple neuritis and cerebropathies are especially frequent in the tuberculosis of drinkers, and also why in such cases neuritides and cerebropathies break out in consequence of strong emotions or marked physical exhaustion, the products of fatigue in such cases are not sufficiently eliminated through the lymph and act toxically on the nerve elements.

If this is the case, then the designation of such forms of disease as toxaemia is not strictly correct since the direct source of the disease is to be looked for not in the blood but in the fluid saturating the tissue elements.

In this appears to Korsakoff to lie the real objection to the name adopted by him, yet in default of another the title cerebropathia psychica toxaemica seems justified, and to characterize the disease and its genesis." - S.S. Korsakow, in "Arch, f . Psych.", 1890.

Neuritis

"Ziegler (Special Pathological Anatomy, Vol.2, p.343), states on Neuritis: "Other forms occur in which the irritant inducing the inflammation is brought to the nerve directly by way of the blood or lymph. These irritants are, so far as we know, chiefly of an infectious nature; thus in typhus, small-pox, typhoid, and diphtheria, we meet with simple or multiple neuritis, which we can only regard as direct results of the general infection." - Dr Henry Handford, MD, MRCP, in "Brain, A Journal of Neurology", Vol.11, 1889.

"The Essence of the Treatment of Pneumonia:
"Make the blood clean and keep it circulating."

For this purpose relieve the Toxemia and open up the Emunctories." - De Lancy Rochester, at the "American Clinatological Association", 1909.

Blood Cures Disease

A clean gastro-intestinal tract is the first step, towards a clean blood stream.

"For the blood is the life. "Blood", so Byron Robinson teaches in and out of season, "cures disease and prevents it."

But only dynamic blood; only blood that circulates, which in this sense means the closing of a circuit rather than the describing of a circle; blood that makes a live contact between the extreme poles of metabolism - between the agencies that upbuild and tear down the tissues.

And the anatomic and physiologic crux of this dynamism, this circuit, this contact, - important to the normal functions, vastly more important to the repair of pathologic function, I repeat: is Anastomosis or Inosculation.

Conclusions as Regards the "Inosculation Circle"

An "Inosculation circle" consists anatomically of:

1. Vascular arc.
2. A peripheral viscus.
3. Automatic specialized, peripheral ganglia.

The crux, the rock and base of circulation is the "inosculation circle."

The "inosculation circle" is related to important viscera, e.g., "circle of Willis (cerebrum), "utero-ovarian" (genitals), "concentric gastric circles" (gastrium), "ileocolic circle" (ileo-colic angle).

"Entero-colic circle" (enteron and colon), "gastro-enteronic circle" (gastrium and enteron).

Physiologically the function of an "inosculation circle" is to produce hyperaemia in its peripheral viscus and also to transport blood volume from one viscus to another.

The means of functionating the "inosculation circle" is by stimulating its automatic, specialized, peripheral ganglia which dilate its vessels and engorge its peripheral viscus.

The volume of blood occupying the "inosculation circle" may be controlled by stimulation of its automatic peripheral ganglia.

The rushing current of blood to diseased parts, to infected areas is sufficient evidence that blood cures and is a prophylactic of disease and the ability of the physician to control the blood volume in the "inosculation circle" enables him to imitate nature.

The "inosculation circle" possesses unlimited utility in medicine and presents one of the most hopeful therapeutic fields.

The chief rational therapeutics for the "inosculation circle" is Visceral Drainage, i.e., the administration of ample fluids at regular intervals; which produces maximum visceral hyperaemia and maximum visceral elimination.

Finally:

1. A cell lives in water.
2. A cell functions in a fluid medium.
3. The apparatus for executing visceral hyperaemia is the "inosculation circle."
4. The object of an "inosculating circle" is to engorge its peripheral viscus and transport blood volume from one viscus to another.
5. A maximum blood volume occupying an "inosculation circle" exacerbates common visceral function (sensation, absorption, secretion, peristalsis).
6. The solidarity and compactness of the anastomosis of the arteries of the intestinal tract enables it to concentrate circulation in any local segment requiring increased localized function (sensation, secretion, absorption, peristalsis).
7. Ample blood is a prophylactic and cure for disease and on account of abundant blood in the jejunum limited disease attacks it.
8. Blood cures and is a prophylactic against disease.
9. Hence the jejunum with its maximum calibered arteries and consequent maximum blood volume is not only the chief digestive segment of the tractus intestinalis, but is rarely subject to disease (ulceration, or perforation).
10. It is blood that cures disease, and the walls of evacuated intestines in the state of quietude, are quite thick and so richly vascular that the blood supply acts as a prophylactic against pathogenic germs.
11. If the walls or the parieties of the intestine be excessively distended by obstruction of the faecal circulation the intestinal blood vessels became damaged, strangulated and the blood supply becomes seriously impaired and sepsis runs riot.
12. Chronic intestinal parietal distension produces vascular atrophy as in the distended giant sigmoid.
13. Damaged, strangulated, septic vessels accompany defective healing.
14. The vascular degeneration of the intestinal parietes proximal to the obstruction is rapidly increased by the septic state of the contained fluids.

Conclusions Regarding Inosculation Circles

1. Blood cures disease.

2. Each cell lives and functionates in water.
3. The apparatus of executing hyperaemia is the inosculating circle.

An "inosculation circle" consists anatomically of:

1. A vascular arc.
2. A peripheral viscus.
3. Automatic specialized, peripheral ganglia.

The object of the "inosculation circle" is to engorge its peripheral viscus and transport blood from one viscus to another.

The means of functioning the inosculating circle is by stimulation of its automatic specialized peripheral ganglia.

Stimulation of the automatic specialized peripheral ganglia or any segment of the inosculating circle stimulated all the ganglia on the circle which dilates the caliber of all the vessel composing the circle - flooding the peripheral organ with blood.

The inosculating circle is the apparatus by which localized hyperaemia is secured for local, specialized, increase of common visceral function (sensation, secretion, peristalsis, absorption), and if it be the genital vascular circle, the special function of ovulation, menstruation and gestation is added.

The foetal ball, menstruation, ovulation, pubertas, copulation are the natural stimuli of the genital inosculating circle: "utero-ovarian circle."

Food, fluid, faeces, exercise are the natural stimuli of the "inosculation circles" of the tractus intestinalis ("concentric gastric circles," "ileocolic circle," "ileocolic arches," "gastro enteronic circle," "Enerto-colic circle").

Therapeutic stimuli may be exercised with marked influence on the "inosculating circle" of the intestinal and genital tracts.

The solidity, compactness and freedom of anastomosis in every single visceral system (e.g., genital tract, gastro-intestinal tract, pulmonary tract, urinary tract) induces stimulation of any locality, to invite and maintain local hyperaemia.

The crux, the rock and base of circulation, is the anastomosis, or preferably the "inosculation circle."

The "inosculation circle" serves the purpose of transporting blood volume from one viscus to another for functional purposes e.g., food in the enteron, will entice blood from the stomach through the "gastro-enteronic circle."

The utility of any viscus is measured by the quantity and rate of its blood current i.e., the caliber of the artery composing the inosculating circle, determines the capacity of visceral function (e.g. the "genital vascular circle," the "concentric gastric circle," the "ileocolic circle").

Gestation in uterus or oviduct (stimulating the automatic, specialized, peripheral ganglia) concentrates, localizes, persistent hyperaemia, in the genital tract. The automatic, specialized, peripheral ganglia on the "utero-ovarian circle" are genital ganglia, pelvic brain, etc.

The natural means of stimulating the automatic specialized genital peripheral ganglia on the "utero-ovarian circle" is by pubertas, ovulation, menstruation, gestation, heat, massage, electricity, tampon, pessary, etc.

It is by inducing a maximum normal volume of blood to flow through the utero-ovarian circle, the common visceral function (sensation, peristalsis, absorption, secretion) is increased and by special visceral function (e.g. ovulation, menstruation, gestation, the flow of blood through the utero-ovarian artery is markedly increased - perchance trebled during gestation).

Digestion of food or scybala in the gastro intestinal tract localizes, concentrates hyperaania to increase localized common visceral function (sensation, secretion, persistalsis, absorption).

The automatic specialized, peripheral ganglia on the "concentric gastric circles, "ileocolic circle," "duodenal circle" "Pancreatic circle," "Gastroenteronic circle," "Entero-colic circle," the duplicate bilateral, "Major meseolic circles," in short the arcus gastricus intestinalis, which is solidly and compactly anastomosed are Auerbach's and Billroth-Meissner's.

The means of stimulating the automatic, specialized, peripheral ganglia on the "gastro-intestinal circles" is by ample fluid and food administered at regular intervals - also heat, electricity, massage, exercise, environments, etc., etc.

Fresh air in the lungs, (especially cold) induces hyperaemia of the "pulmonary circle" - which not only acts as a prophylactic, against disease but cures disease, e.g., tuberculosis.

The automatic, specialized, peripheral ganglia on the "pulmonary circle" are the pulmonary ganglia.

The means of stimulating the automatic specialized peripheral pulmonary ganglia are by fresh air, (especially cold and exercise).

Ample fluids and diuretics induces local and general hyperaemia of the tractus urinaris, increasing the ureteral function (sensation, secretion, absorption, peristalsis), increases visceral elimination.

Ample visceral drainage increases volume and power of the ureteral current as well as attenuates urinal salts (deposits), hence visceral drainage is not only a prophylactic against the formation of ureteral calculus, but it cures it, floating, dissolving transporting it toward the bladder." - Dr Byron Robinson, MD in "The Arteries of the Gastro-intestinal tract, with inosculation circle anatomy and physiology with application in treatment Visceral Drainage", 1908.

Care of the Blood

"The blood is the foundation of the body. A human body is more than 2/3 water.

The blood is composed of the air we breathe, the fluids we drink, and the foods we eat.

After air, food and water enter the blood they act as carriers, as repairers, as maintainers, and as fuel for the vital spark. Our air, water, and food are as young when we are 50 as they are when we are 15.

If we use proper precautions, the blood at 50 can be as young as the blood at 15.

If we keep the blood pure, clean and undefiled, the body and mind remain young. Health and vigour are maintained.

All we have to do to enjoy this desirable condition is to use reasonable care in breathing, eating and drinking. The blood is full of little cells called corpuscles.

The red corpuscles (which are not red when seen alone) contain iron, which unites with the oxygen in the lungs, and carries it to all parts of the body.

This oxygenation maintains the body heat and the energy; it also burns up old materials so that they can be removed from the body in the form of waste.

As the blood circulates through the structures of the skin, mucous membrane of the bowels, lungs, and kidney substance, specialized cells there select waste materials and expel these from the body.

These wastes are salts in solution, carbonic acid gas, and other acids and gases, urates, fatty substances, etc.

It is a beautiful arrangement, attended to by millions of intelligent beings (cells) within the body. If we attend to the gross details, such as eating, drinking, breathing, exercising and thinking, in fairly intelligent manner, the little individuals within do their work perfectly.

The blood also contains white corpuscles, which act in a most marvellous manner. These white corpuscles are the body guards, the policemen of the blood.

Suppose, for instance, that a bacterium (germ) sneaks into the blood, on mischief bent.

Along comes a white blood corpuscle (phagocyte), wraps himself around the intruder, incorporates the villain in his own (the phagocyte's) body, and starts to digest him.

If we treat ourselves fairly the blood is always able to take care of any kind of infection, with one exception: If a puncture wound is made and filth is introduced into the body and the wound is then sealed up again; or if filth is rubbed into an abraided surface, then there is apt to be trouble.

If such wounds are freely drained, there will be no trouble.

This explains why serum treatment, and vaccination, and antitoxin treatment kill many individuals each year, for they are injected into the body, or rubbed into the skin and no drainage furnished; these substances are a form of animal filth - diseased or decayed animal matter.

They have no relationship to health, except that they sometimes destroy it, and sometimes end life.

The blood stream should be kept sweet and pure.

These serums, antitoxins, bacterins, caccins (or whatever the filth is called) make the blood foul, and poison the body.

The process of ageing usually begins farthest from the heart, in the extremities.

The circulation there grows poor, and the individual suffers from cold hands and more especially from cold feet.

The surface of the body also shows this ageing process early, if it is allowed to manifest. The body surface is served by small blood vessels. If the blood is allowed to deteriorate these small vessels fill up with waste or connective tissue, and then the blood can not circulate normally in the surface.

As a result the skin grows tough, loses its fine texture, and easily wrinkles.

In the face this shows in the wrinkles of age, and bad complexion.

Another ageing tendency of the circulation in civilized man is for the blood partly to stagnate in the great vessels of the abdomen.

Right living will prevent this, especially deep breathing, and exercising.

The circulation need not deteriorate. Give the body good care and the circulation will be as good at 60 as it is at 20.

Make intelligent use of air, water and food, and the quality of the blood does not deteriorate. When the structures of the body are bathed in pure blood, all internal organs will remain clean.

And clean organs give health, increased physical and mental power, prolonged youth. In brief: clean organs can be transmuted into long life of health and success. Internal cleanliness is health." - Dr Rasmus Larssen Alsaker, MD in "Outwitting Old Age", 1926

The Blood is the Life

"Professor James Eustace Radclyffe McDonagh FRCS has proved, by countless tests and experiments on animals and human beings, the truth of the ancient dictum:

> *"The blood is the life", and this has enabled him to formulate the fundamental principles underlying his remarkably successful methods of diagnosis and treatment. He has had the vision and courage to effect a transvaluation of orthodox values and has evolved new methods of approach to medical problems with such impressive results that they are bound to have a profound influence on the progress of science in the near future."*

There is Only One Disease

"That there is only one disease; and secondly, that what are known as "diseases" are no more than manifestations of the damage suffered by the protein in the blood of man, wherein lies his main resistance, from invaders comprising physical chemical and bacterial, agents.

The Fundamental Principle

1. Health and disease are not to be sharply demarcated.
2. Both health and disease in man are traceable through animals and plants to the soil.
3. A healthy and an unhealthy soil depend upon the presence or absence of life, in the form of bacteria, fungi, and protozoa.
4. Health and disease in plants depend upon harmony or disharmony reigning between the attraction, by the protein and the chloroplasts in the sap, of "activity from the soil, water, and sun, its storage in the protein and the chloroplasts, and its radiation by the protein to the structures and by the chloroplasts to the protein.
5. Health and disease in animals and man depend upon harmony or

disharmony reigning between the attraction, by the protein and the red blood corpuscles in the blood, of "activity" from the food, water, and air, its storage in the protein and red blood corpuscles, and its radiation by the protein to the tissues and organs, and by the red blood corpuscles to the protein.

6. The manifestation of disease caused by the disharmony in animals and man appears in the tissue or organ which originated from the damaged part in the protein.

7. The lesions which are formed in the tissues and organs are for the most part the reversed reflection of the change in the protein which has been rendered aberrant. That is to say, when the protein over-expands, the cytoplasm of the cells in the affected tissue or organ tends to over-contract, whereas when the protein over-contracts the cytoplasm of those cells tends to over-expand." - Professor James Eustace Radclyffe McDonagh FRCS in"The Nature of Disease Institute, First Annual Report", 1948.

Rejuvenation of 3 Germ Layers Tissues By Exchanging Old Blood Plasma with Saline-Albumin

"Heterochronic blood sharing rejuvenates old tissues, and most of the studies on how this works focus on young plasma, its fractions, and a few youthful systemic candidates. However, it was not formally established that young blood is necessary for this multi-tissue rejuvenation.

Here, using our recently developed small animal blood exchange process, we replaced half of the plasma in mice with saline containing 5% albumin (terming it a "neutral" age blood exchange, NBE) thus diluting the plasma factors and replenishing the albumin that would be diminished if only saline was used.

Our data demonstrate that a single NBE suffices to meet or exceed the rejuvenative effects of enhancing muscle repair, reducing liver adiposity and fibrosis, and increasing hippocampal neurogenesis in old mice, all the key outcomes seen after blood heterochronicity.

Comparative proteomic analysis on serum from NBE, and from a similar human clinical procedure of Therapeutic Plasma Exchange, revealed a molecular re-setting of the systemic signaling milieu, interestingly, elevating the levels of some proteins, which broadly coordinate tissue maintenance and repair and promote immune responses. Moreover, a single Therapeutic Plasma Exchange yielded functional blood rejuvenation, abrogating the typical old serum inhibition of progenitor cell proliferation.

Ectopically added albumin does not seem to be the sole determinant of such rejuvenation, and levels of albumin do not decrease with age nor are increased by NBE/TPE." - Mehdipour et al., Department of Bioengineering, University of California Berkeley, in "Aging", 30 May 2020.

Disease is in the Blood, which then passes it into the Organs

"You here allow that the hotly is but one whole; why don't you act up to this in your practice, instead of treating it piecemeal, as you do, and attempting to find out the diseased organ? Once for all, let me tell you, that all disease is in the blood, and not in the diseased action of an organ, which you absurdly attempt to establish." - Dr James Morison, MD, in "British College of Health", 1831.

"At whatever period these eruptions may present themselves, ***their manifestation is to be interpreted as an effort on the part of the eliminative powers of the system to get rid of a poisonous element, which interferes with its well being. The disease is in the blood. Here it commences its life, as a minute inappreciable atom, received into the vital current by imbibition; and from that moment to the time when the cutaneous derangement is about to declare itself, it continues to circulate and mingle with the various fluids, and to pervade the different organs and tissues of the body.****" - Dr Silas Durkee, MD in "Gonorrhoea and Syphilis", 1859.*

"To cut the most diseased part from the tree does not cure it. The natural processes going on in plants are the same as those going on in man. To cut the diseased part from the human body does not cure it, because the disease is in the blood which circulates through the system. There is not a single portion of our body which is not reached by the blood. Be disease in whatever part of the body it may, it is always in the blood. The blood is the life. When that is clean and pure, sickness is impossible." - William Radam, in "Microbes and the microbe killer", 1895.

Poisons in the Blood

"According to Fodere and Orfila poisons are:

"Any substance which, taken internally, or applied in any way to the living body, are prejudicial to health or destroy life."

All the mucous membranes, and more especially the gastro-intestinal, allow ready absorption of poisons, also those of the respiratory system, which not only allow of the passage of gas, but also substances dissolved in dialysable fluids. The serous membrane and subcutaneous cellular tissue are also absorbent, and when a poison is introduced directly into the current of the blood, grave results follow almost at once. Other conditions may cause the degree of absorption to vary, such

as the nature of the vehicle, the condition of the membranes, and even the state of health of the patient. The state of the stomach and intestines must also be considered, viz., whether they are full or empty, and, if full, the nature of the contents. **Circulation: Once the poison is absorbed, it is carried to various parts of the body by the circulation, and its special results are then made manifest, and here the part of the body from which absorption has taken place must be remembered as this has a considerable influence on the symptoms.** Most poisons before they can produce any result have to gain access to the circulation but in transit a considerable portion may be retained in some special organ or organs, or eliminated from the body, as for example, one that is absorbed through the stomach or intestines may have a large portion either retained in or eliminated by the liver, or if volatile, exhaled by the lungs. **Deposition: Most poisons are found dissolved in the blood plasma. Some poisons have an affinity for certain tissues or organs. This deposition, as well as the process of elimination, diminishes the quantity of the poison in the circulation, and retards the appearance of, or lessens the severity of the symptoms.** Elimination: Poisons in the blood are eliminated in the excretions in exactly the same way as those that are deposited in the various tissues." - J. A. Nunn, FRCVS, FRSE, in "Veterinary Toxicology", The Veterinary Journal, Vol. 58, 1904.

*"**Poisons in the Blood: That a large number of substances comprising medicines and poisons enter into the blood and are thereby diffused over the whole of the body, has been clearly established** by the discovery of them in that liquid, as well as in the secretions and excretions derived from it, and in the soft organs, such as the liver, spleen, heart, and muscular system. This diffusion of mineral substances by means of the circulation was in the first instance established by experiments on animals. **Poisons thus absorbed are diffused through the body and are either deposited in the organs, or slowly eliminated in the secretions if the individual should survive the effects. These agents appear to fix themselves more in certain organs and secretions than in others.**" - Dr Alfred Swaine Taylor, MD, FRS in "On Poisons in Relation to Medical Jurisprudence and Medicine", 1859.*

*"**Soluble poisons find their way into the blood from the pathogenic bacteria in the stomach and intestine, and being carried throughout the organism, set up more or less irritation in the various tissues.** Local affections as the sequelae of typhoid fever are quite numerous, and even slight disorders of digestion, if not relieved, will be sufficient to cause derangements of the nervous system that are quite formidable and persistent until the true causes of their development are discovered by an examination of the digestive apparatus. **Asthma, epilepsy, headaches, neuralgias, and many of the disorders, may be traced to the alimentary tract**." - Dr John Aulde, MD, in "Soluble Poisons in the Blood", The American Therapist, August 1892.*

*"**Of the discovery of Poisons in the Blood.** With so many unequivocal proofs before us of the entrance of poisons into the blood, it becomes an object of paramount interest, with reference both to physiology and to the practice of medical jurisprudence, to inquire whether poisons can be detected in the circulating fluids, or generally in parts of the body remote from the place of their introduction. Certain poisons, after being swallowed, have been detected in the blood and soft parts of the body, as well as in the secretions and excretions." - Dr Robert Christison, MD, in "A Treatise on Poisons", 1835.*

"**Macallum the physiologist of the University of Toronto, analysed the blood of animals (including man) in comparison with sea water, and found that the blood was very similar in many of its constituents to the water of the sea.**

The blood consists of water in which are dissolved the chlorides, phosphates, carbonates and sulphates of sodium, calcium, potassium and magnesium in about the percentage in which these saline substances are found in sea water.

Also dissolved in the water of the blood are found substances being carried to the tissues and waste matters on their way towards excretion.

Macallum's gives a very fair rough notion of what blood really is.

It is water with a few mineral salts (such as sodium chloride and others) dissolved in it; with digested (that is, dissolved) food in it; with the waste substances of the body dissolved in it (as the waste substances of the sponge's body are dissolved in the water that pours out of its canals into the sea); and with many other substances dissolved in it.

It is in these other substances, as well as in the food and waste matters in the blood, that the osteopath is interested, realizes that health depends upon the perfect, or nearly perfect, equilibrium that maintains between the poisons that may enter the blood from without, through the activities of germs that lodge in the body (or the poisons that may be made by the body itself), and the neutralization of these substances by anti-poisons in the blood.

This again is what is called immunity.

Poisons or "toxins", as we call them, are chemical compounds which destroy the tissues, or which disturb the great chemical factories of the body in the normal manufacture of their products." - Dr M. A. Lane, DO, in "Dr Andrew Taylor Still Founder of Osteopathy", 1918.

***"The natural tendency of the system to expel what cannot be assimilated is vigorously exerted to depurate the blood of that which possesses so potent an influence over its elements; hence the increased action of the different Emunctories."** - Dr C. Radclyffe Hall, MD, in "Provincial Medical Journal and Retrospect of the Medical Sciences", 27 May 1843.*

Elimination of Poisons

"**The circulation of these poisons in the blood is responsible for most of the symptoms which occur in the various fevers, the particular symptoms of individual fevers.**

Certain organs of the body, particularly the thyroid and the thymus glands, the lymphatic glands, and other organs, are capable of destroying germ poisons, and of producing substances by which they may be antidoted.

The activity of these organs, as of other living tissues, is greatly stimulated by the nervous impressions made by cold applications to the skin; hence these cold applications must never be omitted, no matter what may be the temperature.

By means of such applications systematically applied, as experience has abundantly shown, the body may be fortified in advance, so that it may be able to resist the attacks of infectious diseases, such as typhoid fever, malarial fever, and other germ diseases.

It is important to continue the same measures after convalescence is established, so that by building up his vital resistance the patient may be protected from relapse, a constantly threatening danger after severe fever.

The elimination of poisons is to be encouraged by copious water drinking, which should not be neglected in fever." - Dr J. H. Kellogg, MD, in "The Home Care of Fever Cases", Good Health, April 1903.

"We learn that poisonous substances, taken by the stomach, enter the plasma or mingle with the fluid of the blood; and thereby the poisoning, not of all, but of some one parenchymatous organ ensues, determined by the nature of the poison, and the special qualities of the parenchymatous elements of the different organs.

But, **if we compare the actions of these common poisons received into the body through the stomach, with the action of aerial poisons inhaled by the lungs, important differences will be found.**

In the former, the symptoms do not begin with fever, nor is any contagious matter generated in the blood; whereas both these phenomena are distinguishing features of the latter.

Here, then, we have a ground for our argument, that the two parts of the blood have distinct pathological relations; for poisons taken by the stomach exhibit themselves by symptoms which proceed from some local parenehymatous organ, and they do not cause the production of a contagious matter in the blood; whereas poisons inhaled from the atmosphere by the lungs very often do so.

Yet both species or classes of poisons act through the medium of the blood.

In 1832, numerous cases of cholera, then epidemic, were treated by saline injections, thrown into the blood in large quantities, not only without hurt to the patient, but in some instances with great apparent benefit.

Among many others, there is a very remarkable case reported in the Lancet (vol. II, 1831 and 1832), in which 5 gallons of saline liquid were injected by a vein, in 4 days.

The recovery of drowned persons has been attended with so much success as the "Ready Method" of the late Dr Marshall Hall.

The principle, therefore, upon which his method is founded, may probably be accepted as true.

> *"During the circulation, the oxygen inhaled by respiration unites with the carbon of the blood, forming carbonic acid, which is exhaled in its turn by respiration, except in cases where the respiration is suspended, as in drowning and other forms of apnoea. In apnoea, the carbonic acid retained in the blood poisons it; and the organs, beginning with the brain and spinal centre, are in their turn poisoned by this blood poison. The circulation. Without respiration, is a blood-poisoning process ; respiration is a de-poisoning process. By respiration, the carbonic acid poison formed during the circulation is eliminated from the blood, and evolved from the system".*

Injurious substances dissolved in the air and inhaled by the lungs, and specific poisons introduced in very small quantity into the blood, produce infectious or contagious fevers." - Dr William Addison, MD, FRS, in "Gulstonian Lectures on Fever and Inflammation", British Medical Journal, 1859.

> *"Fatigue may be muscular, mental or emotional, and is due to toxins or poisons in the blood. These toxins are one of the results of cell activity of any kind in the body. Whenever the body is rid of the toxins we feel refreshed." - Dr Florence Harvey Richards, MD in "Hygiene for Girls", 1913.*

"**Poisons manufactured in the body influence the nervous system injuriously.**

Thus neurasthenia, the many forms of which have the common element of chronic fatigue, closely resembles chronic poisoning; both conditions exhibit a disinclination for sustained effort, disturbed sleep, more or less tremor, slight headache, difficulty of being interested in what is going on around one, and the feeling that everything is "boring".

All these things indicate a diminution of vitality.

Now one of the most potent causes of this chronic fatigue is indigestion, using that term in its widest sense as covering everything from gastric colic to catarrhal colitis.

The results of the absorption of intestinal poisons are called Auto-Toxaemia; and it is the belief of many neurologists that these toxins are responsible for many more cases of neurasthenia.

As it may not be easy to realize just how truly poisons in the blood influence the nervous system, let us take the case of what is called a "sick-headache" or "an attack of biliousness.

Here undoubtedly the products of imperfectly digested food and of the action of bacteria upon these, plus the absorption of some bile into the blood,

are responsible for the exceedingly disagreeable symptoms so familiar to many sufferers.

There are:

1. Nausea.
2. Vomiting.
3. Diarrhoea.
4. Headache.
5. Chilliness of the skin.
6. Aversion from light (photophobia).
7. Great irritability.

These outward effects on the nervous system are due to the circulating poison's injuring the nerve-cells, the correlative of which in consciousness is the depression and shortness of temper which characterize the condition.

The prime cause of migraine (one-sided headache) or "biliousness" is intestinal indigestion permitting of systemic poisoning.

The symptoms are clearly of a toxaemia of intestinal origin:

1. Nausea.
2. Vomiting.
3. Diarrhoea.
4. Vaso-motor paralysis.
5. Chilliness.
6. Aversion from light (photophobia).

All point to that conclusion.

The headache may be partly due to a unilateral referred pain factor, the reference being into the sensory nerve of the face from the afferent nerve of the stomach.

The vomiting, the vaso-motor paralysis, and the chilliness are reflex phenomena.

The dependence of irritability and depression on poisons which should be eliminated has long been recognized by every one. The causes of epilepsy are still more obscure; but at least some have an intestinal origin.

One case which I attended for more than a year, a little girl of 12, had an epileptic attack every 10 days or so, until we ascertained that she was suffering from an attack of diarrhoea due to intestinal indigestion.

When this was anticipated, and an enema given to wash out the lower bowel, the attacks ceased." - Dr David Fraser-Harris, MD in "Nerves Mater-System of the Body", 1927.

"In heart disease the circulation is defective and there is an increase of waste product poisons in the blood. These poisons in the blood must have an injurious effect on the nutrition of the red corpuscles, and we have already seen that unhealthy red blood corpuscles are soon removed from the circulation and destroyed. *We say that poisons stimulate the leucocytes to multiply and that the spleen has to increase to produce them, or to store them." - Dr Walter K. Hunter, MD, in "On the Pathology of Pernicious Anaemia", Glasgow Hospital Reports, 1898.*

"There is probably no structure of the body so mobile or so susceptible of great changes as the iris. The pupil of the eye, by the size of which these changes are perceived, is ever enlarging or diminishing under influences of the most varied kinds. These pertain in health to the impingement of light on the retina, and to the accommodation of the eyes to focal distances; in disease to numberless affections of the brain, spinal cord, and sympathetic system, and even to the more subtle changes which take place in the nervous system from the circulation of poisons in the blood." - Dr Samuel Wilks, FRS, in "On the Pupil in Emotional States", Brain, April 1883.

"There are symptomatic, pathological, etiological, and therapeutic reasons for believing that the blood vessels are at fault in cases of neuralgia, and therefore it seems necessary to consider true neuralgia as a sympathetic neurosis,
affecting certain tracts of cerebro-spinal nerves, resulting in simple dilatation of the vessels of these nerves, brought about by reflex irritation, or possibly by the specific action of certain poisons in the blood." - Dr James R. Whitehall, MD in "Edinburgh Medical Journal", December, 1887.

"**In defence of the Independent System and Treatment of Disease:**

1. I first inform that the blood of the human body is continually wasting or decaying.

That we are continually inhaling the impurities or poisons of the air, that we frequently poison the stomach by eating unwholesome food or drinking impure water;

That we may also injure the internal organs by spraining or bruising the parts, and that we frequently cause disease by excessive labour of body or mind.

2. Second, I will inform you that **when the excretory organs of the body are acting harmoniously together the impurities and poisons are removed from the system as nature requires, and that we can assist nature by arousing the excretory organs to a healthy condition and by cleansing the blood.**

In the Treatment of Disease:

I first inform, that when one or more of the excretory organs becomes weak or diseased the impurities or poisons are retained in the system or thrown upon the remaining organs to be carried off, and by a powerful effort the poisons and impurities may be passed from the system, but in delicate constitutions, or when the nervous system becomes overpowered from any cause whatever.

It is necessary to act upon the healthy organs to enable them to carry off the accumulated poison until the diseased organ or organs are restored to an active condition.

Purging and vomiting is a natural effort to remove accumulations from the stomach and bowels and to relax the system so that disease is more easily passed therefrom." - Dr Charles Samuel Davis, MD, in "The New System of Medical Treatment", 1886.

Concerning Bacterial Toxins

"In microbiology, the term bacterial toxin, coined by Roux and Yersin, designates exclusively the special class of bacterial macromolecular substances that when produced during natural or experimental infection of the host or introduced parenterally, orally (bacterial food poisoning), or by any other route in the organism results in the impairment of physiological functions or in overt damage to tissues.

These unfavourable effects may lead to disease and even to the death of the individual.

Bacterial toxins are differentiated into 2 major classes on the basis of their chemical nature, regardless of their cellular location and the staining features of the bacteria that produce them: bacterial protein toxins and the toxic lipopolysaccharide complexes present at the surface of the outer membrane of the cell walls of Gram-negative bacteria.

Toxin-Mediated or Associated Bacterial Diseases

The toxins of pathogenic interest exhibit a variety of effects in bacterial diseases.

Bacteria that colonize a wound or mucosal surface but do not invade target cells can produce toxins that act locally or enter the bloodstream and attack internal organs (e.g., Corynebacterium diphtheriae, Vibrio cholerae).

Bacteria growing in a wound (e.g., streptococci, staphylococci) can produce toxins that destroy host tissue and kill phagocytes in the immediate vicinity of the bacteria, thus facilitating bacterial growth and spread.

Food Poisoning

On the other hand, toxins formed in food and then ingested along with the food can be the source of pathological symptoms. Most bacterial toxins involved in food poisoning are enterotoxins (toxins acting on mucosal cells of the intestinal tract). However, there are also other food-borne toxins, such as botulinal neurotoxins, that are not enterotoxic." - Joseph E. Alouf in "Bacterial Protein Toxins: An Overview", Bacterial Toxins Vol. 145, 2000.

The Absorption of Toxic Materials

"Streptococcus Pyogenes does not have invasive powers sufficient to cause immediate illness or death by overwhelming the resistance of the animal.

The bacteria, after gaining entrance to the blood stream, localize in the tissues of the joint area, which is a point of low resistance in the body of the animal.

Here the microorganism causes acute inflammation and often pus formation.

The defences of the body do not allow the infection to become generalized unless, at a later date, the toxic materials absorbed from the affected joint sufficiently lower body resistance, or the body defences become more or less exhausted in combating the infection in the joint.

Many animals with "swollen joints" do not develop septicemia with subsequent death until 2 to 4 weeks after becoming affected.

Those which survive retain sufficient body resistance to overcome the infection, in which case an accumulation of pus becomes a "cold" or "sterile" abscess from which the microorganism can no longer be isolated.

In animals affected with swollen joints it is not uncommon to find such abscesses in the abdominal and pleural cavities at postmortem examination.

The absorption of toxic materials from such "cold" or "sterile" abscesses could easily account for retarded growth and development in animals which survive." - M. W. Emmel, in "Swollen Joints in Range Calves", Florida Agricultural Experiment Station Bulletin, February 1945.

"**There is no doubt that the majority of diseased states that man is heir to emanate from a deranged digestive apparatus.**

Food is taken into the body to replace broken down tissue used up in performing the functions of life, to store up reserve materials, and to further growth of the organism, during infancy, childhood, and adolescence.

The foodstuffs, carbohydrates, fats, proteids, salts, and water are acted upon by the various processes of digestion and rendered absorbable.

We have, mouth, gastric, and intestinal digestion.

The food being masticated and insalivated in the buccal cavity, where starch is converted into maltose, then the food is passed into the stomach, where the gastric juice acts upon the proteids, converting them into peptones, while the amylolytic action of the saliva is continued for some time.

After the food has been converted into chyme in the stomach, it is expressed by the pyloric orifice into the small intestine, where the pancreatic and hepatic secretion, with the succus entericus convert chyme into chyle, splitting up fats, etc., and after the foodstuffs have been thoroughly acted upon by all digestive ferments, the chyle is taken up by the chyleferous vessels of the intestines and enters the general system by the way of the portal circulation.

The residue of undigested materials, the faeces, pass along the large intestine and are excreted via rectum by the anal orifice.

If any part of this digestive machinery fails to do its work there immediately obtains bodily disharmony; as a result the foodstuffs are not rendered absorbable as they should be, and fermentation is the consequence, which induces toxic states, which in turn is one of the causes of high arterial tension.

If, on the other hand, digestion goes on normally, and waste material is not eliminated properly, there obtains an accumulation of faecal matter in the intestine, due to atony of the bowels or other causes, these faecal matter will not only undergo decomposition by the action of bacteria, but the absorption of such materials will produce a state of toxaemia.

If the body is in a state of lessened resistance the retention of such toxic materials will produce nephritis, diabetes, gout, neurasthenia, anaemia, and other serious conditions.

The circulatory structures will suffer as described before, and we have laid again the foundation for buccal disorder.

The end products of albumin decomposition, indol, skatol, cresol, phenol, acted upon by the bile, are eliminated by the kidneys and are recognized in the urine as indican.

Normal urine contains traces of indican, but if the decomposition of albuminous material goes on in the body the urinary indican is increased.

Herter, in speaking of excessive gastroenteric fermentation, says:

> *"Intestinal disturbances attended with decreased secretion of bile or pancreatic juice (or both) are usually associated with an increase of indican.*
> *The most frequent pathological causes for increase of urinary indican are:*
>
> *1. Diminished secretion of hydrochloric acid;*
> *2. Diminished secretion of intestinal digestive juices;*
> *3. Excessive use of proteid food, especially meat."*

Gastrointestinal fermentation is often the cause of interstitial gingivitis (pyorrhoea alveolaris), and a careful study of the urine will help to ascertain the systemic cause of the condition. All patients who suffer from gingivitis whom I see must bring a sample of urine, a blood examination, an estimation of haemoglobin is made, which measures prove invaluable in the recognition of systemic

disturbances which cause buccal disease.The treatment in many of these cases consists merely in the correction of dietary faults, the administration of cathartics, the ingestion of water to stimulate excretion of waste materials." - Dr William J. Lederer, DDS, in "The Relationship Between Dental and Systematic Disturbances", New York Medical Journal, 9 January 1909.

> ***"Because toxic materials may be borne in the bloodstream to every part of the body visited by the circulation, and have a local effect anywhere in the vascular system but particularly in the capillaries where the blood current is slowed. The cellular changes which take place in nerve paths in chemical poisonings indicate that similar changes probably take place in autogenous poisonings and these result in the impairment in the functional activity of the neurons which necessarily causes trophic and vaso-motor changes. It is well known that disorders of the digestion are very frequently accompanied or followed by cutaneous eruptions, and these are due to auto-intoxication if the poison is formed within the body, but are extrinsic if it is ingested preformed. Auto-intoxication causes a great variety of mental symptoms varying from slight indisposition to delirium and coma. It is well known that the insane and mentally depressed are particularly liable to skin diseases, and it is quite reasonable to suppose that the same cause may in many cases act as the cause of both disorders."*** *- Dr William Louis Chapman, MD in "Auto-Intoxication as a Cause and Complication of Disease", 1903.*

The Heart May be Injured by the Toxic Products of Imperfect Digestion

"In a paper contributed by me, "The Ratio which Alimentation should bear to Oxygenation in Diseases of the Lungs", 1894.

My observations up to that time had shown that not only in gastric and intestinal affections, but also in pulmonary disease, it is necessary to pay much attention to the diet and exercise, to see to it that the system is not burdened by an amount of food in excess of its powers to digest, oxidise, and assimilate.

Recent personal experience has proved that in cardiac affections the same principle holds good.

Indeed, in the case of an embarrassed heart, a disregard of sound dietetic rules can do far more harm than in tuberculosis.

In 2 ways at least the heart may be injured by the toxic products of imperfect digestion, as well as by suboxidation and other faults of metabolism:

1. Its muscles may be directly impaired by the circulating poisons, and at the same time be poorly nourished in common with all the other muscles by the blood previously impoverished from the same cause.

2. Its work may be much increased by the contraction of the arterioles resulting from the action of the alloxuric bodies and other products of imperfect metabolism.

It depends upon the particular fault in this process, and the nature of the resulting poisons in the circulation, whether on the one hand enfeeblement of the cardiac muscle and possible dilatation result, or on the other hand, primarily hypertrophy, with then dilatation as a later consequence." - Dr Boardman Reed, MD in "The Hygienic and Mechanical Treatment of Heart Disease", The Journal of Balneology, and Climatology, 1902.

"As the functions of the liver and Emunctories are restored, the Heart's action becomes more natural." *- Dr Charles J. Meller, MD, in "The British Medical Journal", 25 October 1862.*

Remarks on Fever

"Our informant tells us, that during the early period of the attack, and whilst it is at its height, the power to infect is not nearly so great as during the decline of the disease, and the advance towards convalescence.

Here is another element in our belief, and we say, that whilst the disease is declining, and the patient recovering the system is engaged in freeing itself of the poisonous matter, which is being evolved at the various Emunctories of the body.

Now, these are not speculations, but carefully ascertained facts, and lead, very conclusively to the belief, that in continued fever, the blood is primarily affected.

Whether the constitution of the blood itself is changed by the action of the poison of fever, or, whether the blood merely serves as a vehicle for the conveyance or that poison in a free state to the various organs.

In the progress of the disease, we find that the head symptoms, during the early period of the attack, are confined to frontal headache and giddiness, with more or less of intolerance of light and sound; and as the disease advances, these conditions pass into great restlessness and sleeplessness, with active delirium, or it may be great torpor and drowsiness, with a wandering and confused state of mind when roused; and either of these forms may pass gradually into coma and death, or under more fortunate circumstances, into convalescence and recovery.

All this would seem to mark the increasing influence of the poison on the blood, and through the blood, on the cerebral functions; and when this influence terminates short of death, we have another law of the action of poisons brought into play, namely; **that after a time they lose their power over that particular system, and are discharged therefrom, leaving the individual in a fair way of recovery.** Hence the wisdom of Cullen's statement, that **the proper object of treatment is: "to obviate the tendency to death", well, knowing that if the**

patient can be kept alive, and free from serious local lesion, for a sufficient time, the system will shake of the load of poison by which it is oppressed." - Dr William Davies, MD, in "Provincial Medical & Surgical Journal", 27 January 1847.

Chapter 68

Cancer; Aggressive Malignant Growth

"There will be an estimated 18.1 Million new cancer cases (17.0 Million excluding nonmelanoma skin cancer), and 9.6 Million cancer deaths (9.5 Million excluding nonmelanoma skin cancer) in 2018.

1. Lung Cancer is the most commonly diagnosed cancer (11.6% of the total cases), and **the leading cause of cancer death (18.4% of the total cancer deaths).**
2. Female Breast Cancer (11.6%), Male Prostate Cancer (7.1%).
3. Colorectal Cancer (6.1%) for incidence, and Colorectal Cancer (9.2%) Stomach Cancer (8.2%).
4. Liver Cancer (8.2%) for mortality."

- Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A, in "Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries", CA: A Cancer Journal for Clinicians, November 2018.

Cancer is not a Disease

Cancer is a word that is used to designate, a type or form, of an aggressive malignant growth.

This type of aggressive malignant growths are not diseases, as such, they are rather, or become rather in the way they act as parasites, a living force that feeds from the organism as if a separate entity from the host.

Thus cancer is that which lives upon the cellular force by the growth itself, and as such it can cause pains anywhere and everywhere, for it is a living thing on and of the body itself, thus a life force living upon human tissue.

Causation Factors of Cancer

Are the effect of the state and condition in which the body system is at in relation to the uses and abuses, and or, from the:

1. Functional causations, from accident or injury.
2. Organic Toxic causation, that which places an excessive burden, or toxaemia, and which leads to inflammation.
3. Organic Chemical causation, this allowing the improper coagulation through the blood and lymph forces; causing adherences or sticking, or the accumulations that form more in the lymph, though if irritated they might become malignant.

4. Acidosis, or super-acidity, may cause irritations that can become malignant in their nature.

5. Stasis in its varied forms becomes an important contributing factor in the causations of cancer. For example chronic stasis in the mammary glands, causing breast cancer, and that of chronic stasis in the large colon, causing colon cancer, thus to cite 2 known examples.

6. Certain types of germ activity which become malignant in their activity,

7. The Mental factor, whereby mind-sets, fears and attitudes from the mental have an influence in the physical, has it is known, everything in the physical is first created in the mental.

8. Spiritual Factor, and of-course there is also one particular type of causation factor, which is given from the effect that: "life is a continuous experience".

One of the reasons we know that there are different causation of that which is termed by cancer.

Is that, depending on the type, there are different therapeutics needed to act in resolving same.

And the effects and actions of which different remedial natural agents have upon the speedy recovery of same.

"**Cancer (L. a crab, ulcer):**

1. A malignant tumour of epithelial origin.

2. Specifically, hyperplasia of epithelial or gland cell with infiltration and destruction of tissue. May be caused by various forms of chronic irritation." - in "Taber's Cyclopedic Medical Dictionary", 9th Edition, 1962.

"To give you a sense of how damaged these cancer cells are, we do this in our own clinic. We'll get a cancer patient with a cancer that's not behaving like we expect with treatment, and we can actually put it in a culture and grow it up, and we can then do genomics on that tumour cell. At that point, the cell is so damaged it can't repair. And the more I've learned in the last 7 years of starting understanding cancer in the context of the microbiome, I started to realize, these cancer cells are simply just so damaged, and they're so isolated, that they've come to do the only thing they can do. They think they're the only thing left of life. They have completely forgotten they were part of a larger organism, so this is the dream of their own that they started to dream of, I can't repair any more and the only thing I've got left, the only option is to divide. And so these cells start to go into cell division very quickly. And that's the biochemistry or the cell biology of cancer is rapid cell division." - Dr Zach Bush, MD in "Interconnected", Docuseries, 2018.

What Is Cancer

"When I speak of a cancer, I mean a tumour which will return if I cut it out, which will probably also appear eventually in certain internal organs, and against which I am well-nigh helpless in any effort to eradicate it from the system.

Malignancy

In our investigation of these tumours the term malignancy will be in constant use. Let pause on the threshold of our inquiry to settle what especial meaning we attach to the word. By "malignancy" we imply such an energy of growth as baffles in a greater or less degree the surgeon's interference. And it is convenient to speak of 3 degrees of malignancy:

1. The Persistent Recurrence in loco after apparently complete removal by the knife.
2. The Tendency to Infection of the nearest chain of lymphatic glands with the same morbid growth.
3. Possible Combination of one or both of these conditions with a proneness to the formation of other like tumours in distant parts of the body." - Dr Henry Arnott, FRCS in "Cancer; its varieties, their histology and diagnosis", 1872.

Forms of Cancer

Cancer is a designating name given to forms of aggressive malignant growths:

1. Aggressive Malignant Tumours
2. Aggressive Malignant Cysts

In the body, conditions may arise, that can produce cancerous growth conditions. These are mainly formed by the following types:

1. Glandular Disturbance type.
2. Soft type.
3. The Type produced by Irritation (wrong food choices and combinations).
4. Bone (stony) type.
5. Eating type.
6. The Type of Malignant Growth, that blossoms in itself.
7. External Growth type.
8. Internal Growth type.
9. Organic Disturbance type.
10. Those of the Infectious growth type, that can arise from injuries, such as bruises.

In total, there are 19 types or formations, of these Aggressive Malignant Tumours and Cysts. Thus all manifestations, are a type of one of these 19 forms of Aggressive Malignant Growth's.

> *"Whatever the origin, therefore, of the tumour proper, however it is started, what makes the tumour is the assumption by the primary cells of that tumour of the habit of growth in place of the habit of work, and, according lo the extent of this replacement, so do we get the various grades of tumour formation from the most benign lo the most malignant." - Dr J. George Adami, MD, FRSE, Professor of Pathology, McGill University, Montreal, Canada, in "Concerning the Causation of Cancerous and Other New Growths", Yale Medical Journal, April 1901.*

The Fringes of the Cancer Problem

"Being connected with a hospital where for over a century there had been every opportunity for observing cancer, as it contained wards for inoperable eases, which could remain until released by death.

The Permeation of Cancer

By Permeation, I mean the growth of cancer along the lymphatic vessels as a continuous line of cells, the cells growing just like, tendril shoots by their own power of growth.

The process of dissemination were best seen in the parietes, where they were most easily watched.

The main highway of dissemination was the lymphatic plexus.

My view is that the growth extends centrifugally in all directions independent of the lymph stream, growing along the fine lymphatics of the plexus.

They would notice that although the cancer cells might be embolised in an early stage along the trunk lymphatics to the axillary glands, yet I believe that those cancer cells were destroyed when, after passing- through other glands they reached the blood-stream.

That view had received support from the work of Schmidt, who described the destruction of cancer cells in the small arteries of the lungs.

Although embolism could not carry cancer cells out of the area in which they originated, permeation was capable of doing so.

The fact that permeation could cross the boundaries between adjoining lymphatic areas place the whole body at the mercy of the process if time enough was given.

I show a microscopic section of a permeated lymphatic taken from the deltoid region of the arm in a case of breast cancer.

Turning to particular forms of growth, I may direct attention to melanotic

sarcoma considered as the type of a malignant growth disseminated by the blood stream; but even in that form of growth, lymphatic permeation played a very important part.

The black colour of the growth dispensed with any artificial stain in demonstrating permeation. The growth started from the chromatophores, branching connective tissue cells full of pigment. It was a sarcoma, and not a carcinoma. I mention a case of melanotic sarcoma of the heel in a woman aged 35.

The primary growth had been excised, and did not return; but very soon a mass of glands developed in the inguinal region, and soon afterwards nodules made their appearance on the skin around the inguinal glands, and spread in every direction.

One might consider the earliest secondary deposit in the inguinal region as a primary growth for the purpose of finding out how the dissemination occurred.

That invasion took place because the lymphatics ran in company with the veins, and when the lymphatics were infected, it was only a matter of time for the veins, and later the arteries, to be invaded.

To demonstrate the process of permeation, and in order to show that what I pointed out as lymphatics were really lymphatics, and not blood vessels, I show a slide with a cord of black growth accompanying the artery and vein, the latter being perfectly normal, which shows that permeation of the lymphatics preceded the invasion of the veins and arteries.

After a time the growth distended and ruptured the lymphatics, and the melanotic growth infiltrated the vein.

When the vein was once invaded it was very likely that the lymphatic permeation in melanotic sarcoma had done its most important work, and that the growth then disseminated by the blood stream; but sometimes the distribution of the metastases showed that lymphatic permeation was the important agent practically all through in distributing the growth.

> *"Permeating spread of cancer, was held by Weigert, who had said that cancer went by direct extension along the lymphatic paths. One of the most interesting specimens was, perhaps, the one showing the sarcoma filling the lymphatics, the artery and vein being unaffected." - Professor O'Sullivan*

Direct Infiltration of the Parietes

The extension of permeation in the fascial plexus led to the formation of nodules upon the rectus sheath in the epigastric angle.

Next the muscle itself and the fibrous tissue of the linea alba were infiltrated by the growth, which was thus carried to the subperitoneal fat and to the subperitoneal lymphatic plexus. Cancer cells then escaped into the general peritoneal cavity, and implanted themselves upon the liver, or falling into the pelvis there gave rise to secondary deposits. With regard to stomach cancer, sometimes it invaded the parietes at the umbilicus.

The Natural Cure of Cancer

I think the most important point of my observations, from the practical point of view, was that they showed the presence in cancer of processes of cure going on along with the advance of the disease; and the same tendency of cancer to spontaneous cure in a centrifugal manner could be traced in the primary growth, which, after ulcerating, was sometimes replaced by a mere scar." - Dr William Sampson Handley, FRCS, in "Royal Society of Medicine, Section of Pathology", 4 November 1910.

The Cancer Problem

"In the first place, I wish to point out that cancer has been proved to be neither hereditary, contagious, nor infectious in its nature, but that it is in every instance a self-inflicted malady.

Cancer in man, moreover, is quite distinct from that which invades any of the lower animals, and it is impossible, even by inoculation, to transmit it from one person to another.

I therefore contend that **it is equally impossible to gain any information whatever of its nature or mode of attack by experiments upon the lower animals, and of this fact I think we have ample evidence in the sterile results which have followed the thousands of experiments which have been, and are constantly being, made upon these defenceless creatures.**

I am convinced that this method of investigation has been the means of retarding progress instead of advancing our knowledge of the nature and pathology of the disease.

The very fact that the death-rate from cancer, since I commenced practice, has risen over 200%, clearly points to the presumption that it is a disease entirely de pendent upon so-called civilization, which has led men terribly astray in the matter of diet and general hygiene, and I am strongly of opinion that the pernicious after-results of vaccination have exercised no little influence in interfering prejudicially with healthy cell life.

A predisposing cause, to a certain extent, is based upon the fact that since vaccination became compulsory, and when the subjects vaccinated had arrived at the period of life when cancer, as a rule, attacks the individual, the disease has become more and more in evidence, and has continued to increase at an appalling rate.

Another point which claims our notice is the enormous in crease in the consumption of animal food during this same period. When I commenced practice, the importation of dead meat was about 5 lbs. per head per annum of the population. We know that the importation of frozen meat is now rather more than 100 lbs. per head of the population per annum.

Whether the amount of frozen meat which is consumed has a more pernicious effect upon the human frame than fresh meat, I am not prepared to say, but this I can affirm, that the consumption of animal food not only promotes **constipation, but gives rise to the most noxious form of decomposition that takes place in the intestinal canal.**

Moreover, man's anatomical and physiological conditions do not in any way lend themselves favourably to a carnivorous diet.

The teeth, salivary glands, the stomach, and length of the alimentary canal, all point distinctly to the presumption that man was intended originally to subsist upon the fruits of the earth.

Therefore, I maintain that his constant transgression against the laws of nature, in substituting to such an enormous extent, a carnivorous, **for that of his natural diet, has had a most prejudicial effect upon the health of every cell of his body, and we are well aware that cancer is neither more nor less than the result of a departure from a normal to a morbid cell.**

Healthy cell metabolism has become adversely affected, and a predisposition to disease established, seeing the health and functional vigour of a cell depends upon the condition of the blood, as well as its environment, being in exact harmony with its physio logical necessities.

Otherwise, **its normal role of existence is bound to suffer.**

Its pabulum, derived from the lymph, by which it is in constant contact, must therefore be uncontaminated by any foreign matter which may prove inimical to the functional activity of the cell.

Its nourishment, if it is to retain this, must of necessity consist of an abundant supply of living and not dead matter, a preponderance of the latter, to a proportionate exclusion of the former, being highly detrimental to healthy cell life upon which the resisting power to disease entirely depends.

It therefore follows, that if the blood stream be contaminated to an appreciable extent, either by inhaling for a prolonged period an atmosphere loaded with impurities (for our lungs are only adapted to receive pure air), or the absorption of toxins from the alimentary canal, or any other channel, every cell of the body will assuredly become adversely affected and the bodily health suffer pro rata.

Moreover, as time goes on, and if no precautions be taken to remedy this insanitary condition of affairs, a danger, which will become more and more pronounced, will eventually manifest its unwelcome presence.

This is, that the various glands whose function it is to secrete certain colloids, which exert a powerful influence in inhibiting the evil effects of the toxins above referred to, also become disorganized and cease to supply their due quota of antitoxins to the blood, while those of the stomach, pancreas and liver, which promote digestion and also provide antiseptics to the alimentary canal, also suffer naturally, thus losing their power to check pernicious fermentation and the development of toxins in the lower reaches of the intestinal canal, from which source toxic material so readily finds access to the blood.

This climax having been reached, it is not difficult to imagine the dire consequences which must inevitably ensue.

Normal cell metabolism and the resisting power to disease become imperilled to a most serious extent, and the time cannot be far off when they will become totally demoralized, the result being that any vulnerable part of the body is laid open to the invasion of the enemy.

Nay, more, the vitality of every tissue will have become so adversely affected that it is rendered liable to be transformed into an actual nidus for disease, to establish itself within it.

This is more certain to be the case in organs whose functional activity, normally, fall into abeyance at certain periods of life.

The most important of these are the mammae and uterus, which we know are perhaps more liable to become the seat of cancer than any other organ, and which are fortunately within reach of easy inspection; and, if these have been the seat of injury of any kind, which has still further reduced their vitality, we are well aware, that if the blood happens to be in a vitiated condition, the liability to cancer will have there by considerably increased.

In this connection we should always bear in mind the fact (for an indisputable fact it is), that cancer never puts in an appearance, however remote, unless a suitable soil has been previously prepared for it, and this can only arise when, for a considerable period prior to its incidence, the blood has been in a vitiated condition, and consequently the cellular tissues have been rendered vulnerable to its invasion.

The explanation is that in consequence of those glands, which control cell metabolism, having been deprived of their power, in consequence of the toxic condition of their blood supply, to exercise their physio logical control of the life cycle of the, otherwise, loyal cells, these have, in favour able circumstances, thrown off allegiance to physiological law, and become a law unto them selves, the result being, there arises a case of the survival of the fittest, and the more robust commence to live at the expense of their weaker neighbours.

In short, they become cannibal in their proclivities.

Now, when a cell commences, and continues, to prey upon dead or moribund cellular material, it would seem to become endowed with a new force, which, in normal circumstances, is quite foreign to it.

This new endowment is peculiar also to vegetable growths which derive their nourishment from devitalized organic material, e. g., the fungi in which there exists an amazingly rapid prolification, and multiplication of cell life, varying in potency according to the nature of the soil from which it springs, and the flesh of which varies to a marked degree in its effects upon man when ingested.

They are unable to flourish except in the dark and in rank soils loaded with de composing organic matter, which are in compatible with healthy vegetable life. They invariably point to the desirability of improving the quality of the soil, from which they can readily be eradicated when suitable measures are resorted to.

From the analogy which the natural history of the cancer neoplasm bears to that of fungi, I feel inclined to classify cancer as an example of a fungoid growth, having its habitat upon devitalized animal tissue, the soil being provided by the blood, conveying, in its vascular ramification, an excess of the products of devitalized material, which has been consumed, and which has, in consequence of it having been in this condition, given rise to putrefactive changes of a highly noxious character, and which, moreover, invariably conduces to intestinal stasis, thus permitting of the noxious products finding ready access to the blood stream.

There is another strong resemblance which cancer bears to the poisonous fungi, viz., the acridity (having an acrid smell, odour), and poisonous character of its secretions; and, yet another, in the development of spores, which I have detected and photographed both in their capsule and after they have been discharged from it, in advanced cases of the disease.

And these are, I am convinced, the means by which metastasis is brought about, being conveyed by the lymphatics to the neighbouring glands, and, thence to distant organs.

I don't believe, as I once did, that it is the cancer cell which finds its way to the part secondarily affected, **but that it is these spores which give rise to a growth, retaining to a considerable extent the characteristics of its parent, no matter in what organ they may be deposited.**

This experience, taken together with the fact that **it is impossible to transplant cancerous tissue by inoculation**, or by insertion into a cut made in the skin of a healthy person, and be able to induce it to live and develop there, or, otherwise, to produce cancer in that individual.

This experiment was made upon himself by the late Dr. Senn, of Chicago - from whom I had, direct, the account of this experiment - and other 4 surgeons, who, in conjunction with Dr Senn, had pieces of cancer tissue, cut from a patient, inserted into incisions made in their arms.

The result in the majority of the cases was absolutely nil, yet in two, the inserted diseased tissue seemed to take a hold for a time, but shortly afterwards all trace of it disappeared.

I have every reason to conclude that before cancer can possibly assert itself, a suitable soil must previously have been brought into existence, and this can only be accounted for by a persistent neglect of hygienic laws, and more especially of those relating to diet and the sanitary condition of the colon.

On this point there can be no possible divergence of opinion, if the following facts are looked straight in the face:

1. The cases of cancer which have come under my own observation, and in which, **without exception, chronic constipation had for many years been in evidence.**

2. The diet had consisted of dead material of both vegetable and animal origin, **from which the essential organic salts had been extracted, and the nuclein destroyed in the process of cooking.**

Now, **it is impossible for the blood to retain its own health if these 2 essential constituents are not available, and it is equally impossible for the cells of the body to retain their health and vigour if they are deprived of the living principle derived from the live cells of members of the vegetable kingdom**, or of milk, eggs, etc.

And it is because of this, and the after-results which naturally follow, the most important of which is constipation, that provision is made for the production of the soil to which I have referred.

Indeed, without a single exception, have **I ever met with a case of cancer which had not been preceded by long continued constipation, and, as a rule, by the almost invariable accompaniment of this, viz., a rheumatic diathesis.**

So strongly have I been impressed with this coincidence that I am inclined to look upon a rheumatic condition, which is dependent upon a similar cause, as a premonitory symptom of cancer, and therefore to class constipation as a predisposing cause of this disease almost equal to that of a faulty diet.

In connection with this subject I should like to hark back a little and refer to those local predisposing causes of the disease I began to discuss when speaking of that which is evident in cancer of the mammae and uterus, but which of course can only prove dangerous when a suitable soil had been provided for its seed bed.

I therefore take the opportunity of directing attention to the local exciting causes of the disease, always with the proviso that in no circumstances can cancer possibly arise, no matter how much the part has been irritated or injured, unless there is co-existent that condition of the blood which constitutes the predisposing cause, or, in other words, had provided a soil favourable to its pathogenesis.

Take, for example, cancer of the lip, tongue, fauces, and even the larynx, which is so frequently associated with excessive smoking, and in other instances by the secondary or tertiary effects of syphilis; or that of the stomach, liver and pancreas, **which is, as a rule, coincident with chronic dyspepsia; or that of the rectum and sigmoid flexure, where the irritating and also septic effects of the prolonged retention of hard faeces have been the exciting causes; or sweeps cancer, where the exciting cause is the irritating effects of soot or bituminous dust.**

My contention is, there is too much attention paid to the local manifestation of cancer, and too little by far to the circumstances which have permitted it - an entirely foreign growth - to obtain a footing upon certain organs and tissues of the body, and there develop this most formidable form of disease, which by devitalizing, by means of acrid secretions, its environment, and thereafter utilizing this as pabulum, makes rapid inroads upon it, and in a marvellously short period attains enormous dimensions: for the fact must not be overlooked that the cancer cell still retains the power of secreting, as did its parent cell, though this has become vitiated to a degree commensurate with its departure

from the healthy standard. And I should add that the more depraved the soil is, the more rapid will be the growth of the invading neoplasm and the progress of its invasion of the adjoining area, unless energetic measures are adopted with a view to restore the resisting power of the cells to disease, which is the plan Nature adopts when she, by her otherwise unaided efforts, cures cancer.

And in this connection it should always be borne in mind that cancer is the only disease which grows, mainly at the expense of its environment, though it is always aided to a material extent by a vitiated blood supply.

Whereas, other tumours, in their process of growth, only displace the surrounding tissues and derive the whole of their nourishment from their vascular supply.

The reduction and prevention of cancer, therefore, must depend entirely upon assisting healthy cell metabolism by every possible means, and this can only be accomplished by supplying them with nourishment suitable to their physiological necessities, and at the same time by sanitary measures, applied both internally and externally to the body, which will ensure the freedom of the blood from toxic material; otherwise all our efforts to eradicate this terrible scourge will prove of no avail.

The all-important fact that the human body is not only the most wonderful, complex and delicate piece of mechanism in existence, and yet the most easily kept in order, if only it has ordinary fair play, should never be lost sight of.

A sufficient amount of the living principle of vegetables and fruits should enter into our daily menu, and that when these are cooked, they should not be overcooked, and the cooking should be ordered in such a manner as will ensure the retention of the whole of their natural salts. I also maintain that no fluid should be taken during meals, and that complete mastication be insisted upon. An other point that I should also desire to accentuate is, that water be taken freely between meals, and always in considerable quantity – a 500ml at least, and heated, if preferred. I may add that this habit aids considerably in obtaining a complete evacuation of the bowels, which is essential if the integrity of the blood is to be assured.

Man should ever bear in mind that there is a religion of the body as well as that of the soul, the first receiving its penalties of disobedience during the life of the delinquent, and the latter, as we are led to believe, in the life that is to come.

It is a pitiable state of affairs to contemplate that man by his own act cultivates a virulent neoplasm within himself, which, by the poison it generates, brings him to a premature grave amidst sufferings of the most acute character." - Dr Robert Bell, MD, FRFPS, Etc., Physician in Charge of Cancer Research, Battersea Hospital, Author of "Cancer, Its Cause, Reduction, Prevention and Treatment without Operation", "Health at Its Best versus Cancer", "The Cancer Scourge and How to Destroy It", "Cancer and Its Remedy", "Woman in Health and Sickness", etc., in "The Medical Summary", August 1916.

Chapter 69

Health Towns

Has an example of the importance of the concept of Emunctology, and its universal application we thought beneficial to those not of the Health Profession to understand the principles in which and by which Emunctology is based and apply same to their professional field, in this given case applied to the planing of Towns.

"That it is healthier to live in the country than in large towns, is a plain matter of fact which experience renders familiar to all.

But it is only with in a comparatively short period that any attempt has been made to investigate the causes of this effect; though without such an investigation it is obviously impossible to devise any means at all likely to be effectual in improving the health of towns.

If we would arrive at an intelligent view of the subject, we must carefully consider the phenomena which are engendered in the course of years by the impregnation of the soil of cities with substances which are deposited there in the shape of refuse, or gradually accumulate from various sources.

Everything that comes into contact with man partakes more or less of the character of clothing, and is similarly affected by the action of those causes which are in constant operation wherever men are collected together.

Clothes, as we all know, require to be frequently washed and changed; and if we cannot cleanse and renew the soil upon which we tread, and the emanations from which are constantly rising about us, we ought at least to endeavour to maintain its natural purity as far as lies in our power.

Let the soil be impregnated with organic matter of various kinds; let it receive water enough to moisten it, but not enough to cleanse it; let this water be charged with a solution of sulphate of lime, which, by its combination with the organic substances buried in the soil, will give rise to the most mephitic and poisonous gases; let the ventilation which might have carried off these deleterious emanations be impeded; let light, which facilitates the slow combustion of organic substances, be prevented from often reaching the ground; and we have combined all the conditions necessary to render the soil a pest-house of infection, a dreadful swamp under the show of splendour, whence silently go forth day and night the treacherous agents of so many diseases, which are in reality nothing but the natural and necessary results of this concealed corruption.

The usual causes of the accumulation of those substances which tend to render the soil of large towns prejudicial to health, are, the necessity we are under of using organic substances for food, and the various consequences of that use, the employment of these substances in manufactures, the domestic animals which live

among us, and the human corpses which were formerly - and are sometimes even now, if the statements in the public press are to be believed - buried in the heart of towns, and, wasting away by decomposition, after a number of years form a large mass of putrid matter.

In towns lighted by gas - that is to say, in all towns of any extent - there is an addition al cause of infection, and one which, if not counteracted, may become, in time, productive of immense mischief.

This is the development of vapours which, after being carried along with the gas in the pipes, issue through the escapes, and spread in the earth, giving it a fetid smell that betrays itself when there is any digging for repairs, make trees wither and perish by poisoning the roots, and taint the water in wells.

It is obvious from the above remarks, that the means of preventing the soil from getting into an unhealthy state must consist mainly in endeavouring to diminish, as much as possible, the quantity, of organic substances which penetrate into the earth.

The most customary and simple plan is, to pave the streets with stone.

Independently of the advantages of this plan on the score of convenience for traffic, and the prevention of the formation of ruts and puddles, it evidently diminishes the permeable portion of the soil, since it is only through the interstices between the stones that anything can reach the earth beneath.

Among other means of accomplishing this important object, the following deserve special mention.

There should be numerous water-plugs frequently, if not constantly, open, so as to pour into the gutters a body of water sufficient to carry off all the filth from the houses before it has time to sink into the soil. Sewers and drains should be plentifully laid down and kept thoroughly watertight.

To prevent the dispersion of the vapours and fluids engendered by the gas, some recommend that the gas-pipes should be placed inside the sewers.

It is alleged that such an arrangement would render the repair of escapes more convenient, but on this point there is some room for a difference of opinion.

Cemeteries should be placed not merely quite out of the town, but also below its level; for if the water which runs through the soil finds its way by subterranean imbibition to the soil of the town, it is evident that the evil, against which we are anxious to guard, will be secretly gaining ground.

Every species of manufacture which gives out much organic matter ought to be removed to a distance from the town, or carried on close to a stream of water, powerful enough to carry off everything of this sort at once.

Lastly, the strict est vigilance should be exercised over all gardens, markets, and other places where organic substances are likely to accumulate.

But, besides resorting to such preventive measures as the above, it is of the greatest importance to employ suitable means for counteracting the infection which already exists in the soil.

It is a fact, to which we can no longer shut our eyes, that in almost all our considerable towns the soil is more or less infected.

In this, as in other cases, prevention is better than cure.

The first step should be to let the oxygen of the atmosphere have free circulation wherever there are organic materials capable of becoming injurious to health by decomposition.

It is well known that oxygen, especially when aided by the influence of light, has a tendency to convert organic matter into water, carbonic acid, and nitrogen, by a slow combustion, which, from the moderation of its action, involves no sort of danger. Thus, oxygen is a powerful agent, which destroys the sources of infection whenever it is brought into contact with them.

Besides, the air, by penetrating freely into every hole and corner, has a tendency to dry the earth, the streets, and the walls of the houses. Hence, not only ought the streets to be of sufficient width, but the yard s at the back of the houses should' be large enough to admit the fresh air to that side as well as the other, for if this is not the case the work of purification is only half done.

The next means to be employed consists in the use of wells, a means which has never yet received a fair trial, but which, with proper management, is capable of being turned to good account. A single experiment by a skilful engineer may suffice to demonstrate this.

Having sunk a well in an old farm-yard, the soil of which had been long impregnated with the manure to a considerable depth, he could not get any water from the well at all fit to drink, though the water of another well, situated at a little distance above this, was excellent. However, by dint of working the well, and using the water from it for purposes of cultivation, he at last succeeded in completely changing its condition.

The water gradually lost its colour and its smell, till in the course of a few years it became quite fit to drink.

It is evident that, in this case, the well performed the part of an Emunctory.

It served to wash the body of the soil by means of the water which was drawn down to it, dissolving and bringing with it the animal substances through which it passed.

This action is naturally very slow, and depends upon the quantity of rain -water imbibed by the earth, and flowing down to the interior of the well; but it cannot be denied that, in general, when there are many wells in a town, they contribute to the gradual purification of the soil, especially if, at the same time, the preventive measures above indicated be adopted.

But here an important observation suggests itself with regard to paving, and that is, that the paving, which in some degree prevents the soil on which towns are built from being penetrated with infectious matter, in the same degree prevents it from being cleansed by the rain which falls upon it, and would otherwise sink into it.

This was remarked by the sagacious Franklin, who, in his will, observed that the soil of towns being paved and covered with houses, the rain is carried off, instead of penetrating the earth and renewing and purifying the springs; in consequence of which the water from the wells becomes worse every day, till in

old towns it is not fit to drink.

There is evidently no other means of remedying the evil than to have pure water laid on from without; but at the same time it is desirable not to abandon the use of wells wherever they can be sunk, because of their valuable action as Emunctories, when the subterranean water that gradually accumulates in them is occasionally exhausted?

A third resource, and one which is likely to be more effectual than any other, consists in the raising of plantations near the town.

As an eminent engineer observes, if the utility of trees in preventing the impoverishment of sloping ground, and mitigating the evil effects of violent or continuous rain, is undeniable, they must be no less serviceable in constantly counteracting the unhealthiness produced, or on the point of being produced, in populous towns by organic matter and the excessive dampness of the soil.

The roots of the trees, by spreading out in all directions within the soil, relieve it of the moisture, charged with organic an d saline materials, that it has imbibed.

At the same time the more distant portions of the roots, by virtue of the law of capillary attraction, give back to the earth a portion of the water with which they are overcharged; and thus, if the trees are sufficiently numerous and suitably arranged, a subterranean circulation is established.

Hence we have here self-acting Emunctories, far more efficient than wells, because they can be multiplied to a greater extent.

It has been ascertained by experiment that a sunflower, placed in a glazed flower-pot covered with a sheet of lead, so as merely to let the stem come through, will evaporate as much as twenty-eight pints of water in the course of only twelve hours. What, then, must have been the quantity if the experiment had been made upon a tree?

At the same time that the water is thus drawn off, it is purified.

The pure liquid is diffused through the atmosphere, and contributes to freshen and improve the air.

The salts and organic substances are absorbed by the roots, and serve as nourishment to the tree; so that, by this happy combination, the very deleterious substances themselves are employed to sustain the agents destined to counteract them.

But in proportion to the efficacy of this measure in promoting the health and improving the aspect of towns, is the necessity of careful consideration with regard to the number and arrangement of the trees in different quarters, the choice of such as are suitable for the irrespective positions, and the steps to be taken in order that the roots, as they extend, may meet with sufficient nourishment without ever passing through beds impregnated with substances that are deleterious, or deprived of the oxygen of the atmosphere.

Unless these precautions are adopted, the success of the method must be greatly impaired, if not altogether nullified, because the plantations cannot thrive.

Surely if anything were needed to convince even the most obtuse and inert of

the urgent necessity of prom pt and vigorous measures of some sort, the recent outbreak of that dreadful pestilence which is now making such fearful havoc in almost every portion of the globe, is more than sufficient for the purpose." - in "The Illustrated Magazine of Art", Vol. 4, No. 23, 1854.

Chapter 70

The Emunctologist and Surgery

In regards to surgery: "The best surgery is no surgery".

Surgery should be avoided as much as possible (and should never be allowed to be performed), before all other non surgical options of treatment have been considered.

Needless surgery should never be an option.

There are cases which are death threatening, emergencies, or cases, that are too advanced state, and will not respond to any other therapeutic methods.

The Department of Surgery in the Emunctologist Sanitarium should be staffed by a Emunctologist Trained Surgeon.

Unfortunately, an Osteopathic Surgeon cannot be employed unless he is fully trained in Emunctology.

Medical Trade Surgeons should be avoided like the plague.

"Surgical procedures are adopted to meet various contingencies; as a result the normal relations of the different parts are completely changed, and the patient is left to adjust his digestive apparatus to an entirely new physiologic process.

Such a condition has persisted, undoubtedly because of the fact that the stomach and intestine have remarkable powers of adaptation, and although far from normal function is obtained, the human organism can maintain itself in a certain amount of comfort in spite of these rather unsound procedures.

Indeed, many individuals are cured of disease by permanent gastro-enterostomy, **an operation which from a physiologic standpoint could hardly be less rational.**

There is no reason why we should accept this situation, or regard the problems of the alimentary tract as impossible of solution." - Dr Walter Hughson, MD, in "Reflex Spasm of the Pylorus and its Relation to Diseases of the Digestive Organs", Archives of Surgery, July 1925.

Conservative Surgery

"The conservatism meant is not an adherence to doctrines which have been or are now held.

It is not that kind of conservatism which protests against any changes, and resists all innovations.

In an essay written for another journal, the writer has adopted this term as an analogue of the term Conservative Surgery.

The conservative surgeon, before resorting to capital operations, carefully

considers the situation of patients, and the danger to life which the operations involve; and he regards the preservation of the integrity of the body as a higher success than the most skilful mutilation.

In like manner, the conservative physician considers fully the effects of the potent agencies employed as remedies, appreciating the fact that, if not remedial, these agencies are necessarily injurious, and may prove destructive.

In the management of diseases he always accords due importance to the preservation of the powers of life.

As the true surgeon is not the mere operator, unmindful of the duty of preserving and restoring parts, who uses the knife without regarding the condition of the patient; so the true physician is not the routine practitioner, prescribing, with an unsparing hand, active therapeutical measures without any clear apprehension of the objects to be fulfilled, making no allowance for the natural tendency of diseases toward recovery, and disregarding the state of the system.

It is shown by a reluctance to interfere actively with the course of diseases which have a self limited career.

It is shown by a greater reliance on hygienic measures, and by more attention to alimentation." - Dr Austin Flint, MD, Professor of the Principles and Practice of Medicine, Bellevue Hospital Medical College, Long Island College Hospital, in "Conservative Medicine as applied to Therapeutics", The American Journal of Medical Sciences, 1863.

Surgical Treatment

"Careful interrogation into the condition of the Emunctories is an imperative duty before entering upon the surgical treatment of patients in the prime of life.

In the aged, in whom organic diseases and degenerative changes are much more to be expected, neglect of a painstaking examination is inexcusable.

There are certain conditions which deserve most thoughtful consideration before the surgeon can think of operative procedures.

The condition of the lungs and bronchi, the liver and biliary passages, the existence or not of atheroma or scleroses, the sufficiency of the kidneys, the expulsive power of the bladder and size of the prostate, the state of the gastro-intestinal tract and the activity of the skin, should all be carefully considered.

A small quantity of urine of high specific gravity, especially if this is accompanied by an excessively dry skin, should be regarded as a danger signal and needs careful correction before venturing upon radical surgical measures." - Dr B. B. Davis, MD, in "Pulse Omaha Medical College Journal", April 1901.

Operating on the Problem Instead of the Person

"I ask the patients what operations they've had and, almost invariably, the first was a tonsillectomy.

The tonsils, a specialized lymphoid tissue, function to eliminate the matter generated during the body's light against infection.

They aid in the removal of wastes that occur in the body due to infection.

An inflammation or enlargement of the tonsils indicates that the body is trying to throw off an overload of waste material.

The tonsils excrete this material into the pharynx area, where it is swallowed and then passed out with the regular bowel movement.

Removing the tonsils compromises the elimination system in the body because it forces other excretory pathways to do the Job the tonsils once did.

When normal bowel function is compromised, the whole body is at risk." - Dr. Bernard Jensen, DC, in "Guide to Better Bowel Care", 1999.

One of the Most Common Causes of Chronic Invalidism

"**The First Part of the Large Intestine:** Under this heading are included the ileo-caecal area, the ascending colon, and the hepatic flexure of the colon.

This part of the intestinal tract appears to play the chief role in familial chronic intestinal intoxication. In every case of familial chronic intestinal intoxication the ileo-caecal area is involved.

There is always thickening, and also tenderness on pressure, either deep or superficial according to the degree of inflammation present.

The thickening is due, in the main, to the changes the mesentery in this area undergoes.

The appendix itself is never solely attacked, although in the very acute cases it may be the structure bearing the brunt of the inflammation.

In the acute cases it is necessary to remove the appendix, but in the sub-acute or chronic cases no operation is called for because treatment of the chronic intestinal intoxication is more efficacious, being more comprehensive and fundamental.

There is probably no operation so frequently performed, and so seldom needed, as appendicectomy, and because the operation is itself successful surgeons are apt to think that the patient is definitely benefited.

A few patients are temporarily relieved, but this is the result rather of the rest than of the operation; more are made worse, and in all, the fundamental trouble is left untouched.

An operation certainly removes the risk of a very acute condition occurring later, but ridding the patient of his chronic intestinal condition does this more effectually.

The caecum is almost invariably atonic, and being in this condition it tends to become distended with gas.

The atony is probably the result of previous spasm, and occurs when irritation of the nerve endings in the wall gives place to paralysis, a sequence of the local precipitation of hydrated protein particles.

It is held by some of those who do not suggest adhesions as the cause of the persistence of the patient's troubles after appendicectomy, that they are occasioned by a movable caecum, and instead of re-operating to remove the former, caecopexy is performed with equally unsatisfactory results.

Failing this, the patient is often advised to have the gall-bladder removed.

One of the most common causes of chronic invalidism, in women particularly, is repeated laparotomy (any operation in which the abdomen is opened for surgical treatment).

In most cases of familial chronic intestinal intoxication, when the patient comes up for advice, the ascending colon is found to be atonic, and here again the distension is most probably the result of a foregone spasm.

Atony of the ascending colon is the bugbear of chronic intestinal intoxication, first because it makes it difficult to empty the bowel, and secondly because it results in the permeability of its walls to toxic agents being increased.

Too little is known about absorption from the intestines, but it is highly probable that it follows the ordinary rules of colloid membranes.

The 2 most important rules of such membranes in the living body are:

1. Increased permeability when inflamed.
2. Foreign and toxic bodies can more readily pass through than home and innocuous substances.

In the case of the ascending colon the first is not difficult to prove, and this is done by adding substances, capable of detection in the blood-stream, to the water passed through a caecal tube.

It is found that mercury and silver, placed in the ascending colon through a caecal tube, reach the blood-stream quicker when the ascending colon is damaged than when it is normal.

No Colonic Lavage is perfect until the ascending colon and caecum have been emptied.

The ascending colon is generally regarded as being the only part of the large intestine through which certain products of food metabolism enter the blood-stream, but judging by the aggravation of symptoms which occur so frequently when colonic lavage is first instituted it would appear that, when other parts of the colon are inflamed, toxic bodies can pass through the walls.

On the other hand, it must be remembered that some of the water used may pass forward into the ascending colon and carry in solution, or suspension, bodies which otherwise might have lain dormant.

Much work still remains to be done upon the permeability of the walls of the intestine. The hepatic flexure of the colon is, in the author's experience, a site selected for trouble almost more than any other.

The tenderness elicited upon examination is phenomenal and at times it is extremely difficult to be sure whether the underlying condition is colitis or cholecystitis.

In making the diagnosis of the former in every case the error would not exceed 3%, and this can be reduced to practically nil by going carefully into the history, and by finding similar tender areas in the region of the splenic flexure and in the ileo-caecal area.

Speaking generally, the characteristic features elicited by a digital examination of the abdomen in cases of familial chronic intestinal intoxication, beginning in the left iliac fossa, are contracted sigmoid, contracted descending colon with tenderness which increases as the splenic flexure is reached, still more tenderness in the hepatic flexure, dilated ascending colon and caecum, with tenderness and thickening in the ileo-caecal area." - Dr James Eustace Radclyffe McDonagh, FRCS, in "The Nature of Disease", Part III, Section I, 1931

The Chief Agent of Disaster

"Normal sleep is associated with frequent changes from supine to prone or lateral positions, and this restless type of activity is usual also during the sleep of many patients confined to bed but not in shock, pain or prostration.

During his waking hours the patient treated by complete bed rest lies on his back, and he sleeps, or tries to sleep, in that position after operations or when kept in the orthopneic or Fowler posture.

Since this is not a restful way to sleep, sedatives are given to many patients who are required to live in this fashion.

Thus the stage is set for many hours of inert recumbency, with shallow breathing and diminished muscle tone.

The serious evil sequelae of complete bed rest may appear in a few days; a few phlegmatic or profoundly depressed patients may exhibit these disorders without receiving any narcotic or sedative. It was formerly taught that **Infarcts** occur only in patients with passive hyperemia of the lungs, **but now it is known that they follow pulmonary embolism in 60% of surgical and medical cases without heart failure and in 90% of the cardiac.** Here again the combination of dorsal decubitus with sedatives which depress respiration serves to pave the way for trouble, and young men previously in excellent health may have pulmonary infarction within a week of an otherwise uncomplicated laparotomy or herniorrhaphy if they have been kept "comfortable and quiet" by skilful nursing and constant medication." - Dr. William Dock, MD innovator who questioned medical beliefs, a cardiologist whose views of medical treatment were sometimes at odds with accepted practice, in "JAMA", 19 August 1944.

The Uses of the Appendix

"**The removal of the appendix has been recklessly and criminally advised.**

It has been asserted that the appendix has no use whatever and never had any unless it was prenatal.

Modern science demonstrates that every organ and every function has a designed and essential work to do, and for which it alone is adapted.

Hence, the removal of any bodily organ is bound to harm and handicap the entire body and so render it less effective and more predisposed to disease, less resistive to exposure and more liable to an early death.

The vermiform appendix is now known to be of great value and is in dispensable to the greatest vigour and to the most efficient functions of life.

It is true that the liver, stomach and pancreas pour into the upper intestines powerful digestive fluids, instantly destructive of all germs.

But particles of food evade them and pass into the lower intestines, and would be destined to remain there for a considerable time, doing irreparable harm.

But the appendix, lying as it does at the lower side of the ascending colon, secretes a very valuable digestive fluid, the purpose of which is to aid in forcing the food up the ascending colon, which is the only place where it has to rise against gravity, thereby aiding the other fluids (much exhausted by their work while passing through 7.5 meters of small intestines) in digesting this food and so preventing its decomposition, to the weakening and gradual destruction of the lower intestines.

In people living a sedentary life, the contents of the bowels must either lie dormant or be assisted by artificial means to expel the contents, because it has to operate against gravity.

The washer woman, or anyone pursuing a like vocation, never has appendicitis; because in her work, her movements are such that she agitates the abdomen and so stimulates the circulation of the blood through the entire colon, exclusive of the appendix, preventing sluggishness and stagnation, and so renders herself immune." - Dr B. Curtis Miller, MD, Surgeon to Western Maryland Hospital, Cumberland, Md., in "The New and Scientific Treatment of Chronic Diseases", 1914.

Acidosis in Surgery

"Because of a marked reduction in the Normal Alkalinity of the Blood, many of the patients requiring surgical operations, are unfit subjects for general Anaesthesia and the ordeal of an operation.

The warning signs in such cases are:

1. A history of: unaccountable headaches, vertigo, attacks of dyspnea, occasional nausea or vomiting, an unreasonable dread of the operation, tachycardia, and other nervous symptoms.

2. A peculiar, sweetish odour to the breath. In some cases this is marked and unmistakable.
3. The presence in the urine of the acetone bodies.

To disregard these warning signs is to subject the patient to 1 of 2 undesirable conditions:

1. An anesthesia requiring large amounts of ether or chloroform, and attended with struggling and great rigidity of the muscles, difficult breathing, a rapid pulse and nausea, followed by a prolonged and nerve-racking convalescence with persistent vomiting, restlessness, dyspnea (shortness of breath), a rise in temperature, and much suffering;
2. If less fortunate, to a fatal termination, preceded by nausea, air-hunger, persistent vomiting, a rise in temperature, and great nervousness, followed by coma and death in from 10 hours, to 2 or 3 days." - in "Monthly Cyclopaedia and Medical Bulletin, 1914.

Chapter 71

The Seeker

Until the individual seeks healing, one cannot force the person to accept healing.

Let them seek, not ye prepare or present to them without their seeking.

If the seeker seeks for that which is for self and not for the help, the cheer, the aid for others, this becomes, as the law, a stumblingblock in the experience; and thus confusion arises even in the Experience of the soul attempting to aid.

As the prayer of the seeker, so is the touch of the body, and body, in the ways that are kept Open before the Lord.

As the individual seeks, as there are the activities within self, there are the needs, necessities or requirements on the part of those in the activities of health; and they are seeking specific individual for specific service and specific activities.

These then become one; the seeker and that being sought.

They make for the activities that will bring about those things most desirable and most satisfactory for the body and those dependent upon same.

Consent for Treatment

Until the individual seeks healing, one cannot force the person to accept healing.

Let them seek, not ye prepare or present to them without their seeking.

"And he did not many mighty works there because of their unbelief." - Matthew 13:58

Case Histories

We should require reports, not necessarily medical histories.

There are not medical histories on all cases that seek.

Require their reports, whether they be done in one way or another.

For, they will be quite at variance to what medical reports would be of such, but it's the individual!

For, all that each soul may know of God is contained within itself.

And it blossoms, it grows.

For all disease is sin.

Then that necessary is to eliminate sin in the lives of individuals.

It requires oft the use of mechanical means of various forms, is true; because that entity, that soul is in that consciousness, and not in the consciousness that the Lord thy God is one.

Referral

The Emunctologist should always in case of doubt in seeking a second or even a third opinion if needed from another Emunctologist.

If the condition falls outside the scope of practice or experience of the Emunctologist, he should then make a referral to another Practitioner.

An example being given:

1. If the case is a condition of Tennis Elbow, after the application of Hydropathic treatments specific for the condition the condition does not improve then the Emunctologist should make a referral of the client to an Acupuncturist, for the case of Tennis Elbow either the specific Hydropathic Treatments or Acupuncture are equally valuable in the recovery of this condition.

2. If a case is of a complicated chronic skeleton nature, the Emunctologist should refer the client to either a Physical Manipulation Trained Osteopath, or to a Classical D. D. Palmer trained Chiropractic Adjustment Practitioner.

3. In a case where the condition is in extreme (either organic or functional), which is found to be beyond the point (of recovery) to be treated by any therapeutic measures, (and after obtaining second opinion from another Emunctologist, Osteopath or Chiropractor) then a referral of the seeker to a surgeon should be made.

The following use it and print it as Poster, that you may wish to have on your wall to remind you of a few truths while in practice

Honorarium

> ***"Speak not in the ears of a fool: for he will despise the wisdom of thy words."*** - *Proverbs 23:9*

"In making your charges, take into consideration your skill, experience, consultation, and your remedies if any given.

Remember that your patients will appreciate what they have paid for, don't give your advice or opinion free to any one at the office.

If it is worth anything to the patient it is worth money.

Keep a careful record of each case so you can refer to it at any time.

Have nice printed labels, envelopes and everything about your office neat and in its place.

Let the patient be impressed with the idea that you are trying to do business and that you understand your business.

A few cures of some different chronic diseases will not only win the gratitude of your patients, but make you solid in the community." - Dr G. Jones, MD in "The Medical Summary", 1906.

"This doctrines have guided my practice many years, and experience has taught me not to distrust their truth, safety and value." *- Dr W. Beach, MD in "American Practice", 1851.*

"Experience has proven that those who have previously studied medicine, and afterwards tried to add Osteopathy, have been but a hindrance to the science.
An allegiance to drugs once established, is almost impossible to overcome.
After careful consideration, therefore, it has been established that as a general rule no person shall be admitted as a student who has previously studied and practiced medicine.
It is desired to make successful operators of all who enter the school, and results have shown: The non-medical student far surpasses those who have studied medicine." *- in "Journal of Osteopathy", Vol.1, No.1, May 1894.*

Chapter 72

Necrosis

Death, in the physical body only exist when there is:

Necrosis or functional impediment of a vital organ.

Thus no one dies from having a disease, nor one dies from having an accident.

The world is full of people walking the streets of the planet who have diseases and others who have had an accident, and others even more have had both, and they are still alive.

So neither disease nor accidents kill!

The question is then:

So what brings death to the physical body?

The only thing capable of bringing the physical body to a state of physical death is **necrosis (organic metabolism) or functional impediment (accident) of a vital organ**.

In the case of the kidneys, since anatomically there are 2, in this regards both of the kidneys would need to be in a state of kidney necrosis.

It is possible for a person to be without any clinical signs of life for 1 hour and 15 minutes, and both with and without external assistance be brought to a state of clinical life, and fully recover without cerebral damage, or any other imperilment.

This should make the student, the reader, to understand the paramount importance of looking after the body, and in keeping, in aiding the vital organs of the body, to be in a state which can fend off organ necrosis and maintain life.

In order to achieve this, this book was written.

Clinical Observations

"When we have albuminous urine, **we have congestion of the kidney: when we have congestion of the kidney, we have its Emunctory office inadequately performed; and whenever the insufficiency of renal depuration of the blood proceeds beyond a certain point, the blood becomes so poisonous as to act toxicologically on the brain.**

This, in passing it may be observed, is the explanation of the frequency of convulsions coming on in the course of Bright's disease.

Slight causes may at any time excite such an increase in the congestion as to induce: Convulsions, Stupor, or Sudden Death.

I think, be very safely inferred, that the renal congestion is the cause of the convulsions; or, to be more explicative and precise; **that the convulsions are direct toxicological effects on the nervous centres, produced by poisonous substances which the unembarrassed kidney could throw off with the urine, but which the congested kidney cannot excrete.**

In pregnant women, blood-poisoning exists far more commonly than is generally believed.

There is a series of phenomena resulting from different degrees of Toxaemia, such as:

1. Nausea
2. Vomiting.
3. Coma.
4. Delirium.
5. Convulsion.
6. Mania.

It is important to remember, that the gravid uterus, or other tumour, pressing on the renal veins, or in any way seriously impeding the return of blood from the kidneys, must induce, more or less, inability on their part to perform their Emunctory office; and, when the pressure is great, a consequent condition of toxaemia.

It must also be remembered, that the maternal blood, during utero-gestation, notwithstanding the demands made on it for phosphate of lime, etc., by the foetus, requires, in some respects, an extra degree of depuration, and that, therefore, the pregnant woman can very ill bear an impediment to the free return of blood from the kidney.

She probably requires, for her preservation in health, to throw out a large additional amount of excrementitious matter from her blood, as it is charged with the matter depurating from the foetus, in addition to the ordinary depuration essential to her maintenance in health in the non-pregnant state." - Dr John Rose Cormack, MD, FRSE, in "Clinical Observations", London Journal of Medicine, June 1849.

"The blood by its circulation conveys to each part of the body the materials of which it is composed, while each organ by its Creator is endowed with the power of selecting from the mass what it needs for nourishment, and the performance of its appropriate functions, and of rejecting the refuse to be thrown out of the system.

> *"The blood is therefore a sort of common carrier, conveying from part to part what is entrusted to it, for the common benefit."*

When obliged to carry spirit, it presents it on its way, as it does other materials, to each organ; and each starts with mighty effort, not to welcome and receive, but to repel it.

And if not crippled by the overpowering force of the enemy, it succeeds; and rejected, not suffered to stop, because it is worthless, the carrier, though vexed with its burden, is obliged to take it on to the next; rejected by that, it must carry it on, till, rejected by all as a common nuisance: "it is seized upon by the Emunctories, the scavengers of the system, and unceremoniously excluded."

This is not for any want of kindness in the system toward friends, but because ardent spirit is an enemy a mortal enemy.

It would be treason to harbour it, and suicide to use it.

Nature, through unerring laws stamped by the Divine hand, true to herself and her God, is incapable of such an offence; and till poisoned and perverted by the enemy, will never submit to it.

On every organ it touches, spirit is a poison; and as such it is chased from organ to organ, marking its course with irregularity of action, and disturbance of function; exciting throughout the system a war of extermination, till the last remnant of the intruder is expelled from the territory.

Till vital power is prostrated the enemy can never have a lodgement.

And if, through decay of organic vigour, by the mighty force of the intruder, or the long continuance of the war, and by perpetual successions of new recruits, it cannot be expelled, the work of death is done; the last citadel of life surrenders, and the banner of universal ruin waves over all." - in "American Temperance Society", 1933.

Metabolic Waste

"Metabolic wastes change the microenvironment of cells and tissues, influence the metabolic activities of cells, and ultimately cause cell death.

Metabolic Waste Removal

Another crucial role of the blood is the removal of metabolic wastes.

Many cells seem capable of survival by glycolysis, at least for short periods, **but in the absence of an active fluid transport mechanism accumulated wastes such as nitrogenous compounds, lactic acid, CO2, reactive oxygen species (ROS), hydrogen ions (acid) and sodiumand potassium ions all alter cell activities, and can ultimately kill cells.**

Nitrogenous wastes, including ammonia, urea, creatinine, uric acid, and indoles, are cytotoxic metabolites at sufficiently high levels.

Ammonia induces inflammation and brain edema, poisons neurons, and causes metabolic disorders, which can kill cells. It can also change pH in cells, interrupt energy metabolism, and damage organs.

In vitro experiments show that lactic acid impairs T cell function and changes proliferation and differentiation behaviours of osteoblasts.

Elevated CO2 levels causes increased respiratory minute volume, arterial pressure, and heart rates.

ROS mainly include superoxide (O2•−), peroxyl (•OOH) and hydroxyl radicals (•OH), and nitric oxide (NO). They can be cell-messengers but **can cause toxicity, inducing inflammation, damaging DNA, and killing cells.**

They are also associated with inflammatory diseases including: Neurodegeneration, Rheumatoid Arthritis, and Atherosclerosis.

Kidney failure results in accumulation of nitrogenous wastes, which lead to serious complications, deterioration of other organs, and even death.

Dialysis, which uses semi-permeable membranes **to remove metabolic waste (small molecules and ions) from blood**, has been used to replace the kidneys in clinic since 1950s.

The most common way to remove waste in in vitro is simply by changing the culture medium, or using sufficiently high volumes of culture medium so that wastes will not reach toxic levels. In high-density cell culture, perfusion is normally used to remove metabolic wastes and products.

Activated carbon has been used to remove nitrogen wastes from blood and intestine. Encapsulated activated charcoal has been used to replace some of the kidney's function to remove nitrogen metabolites and has been found improve the kidney function of rats with chronic renal failure.

In the clinic, **activated carbon has been used in hemodialysis, as an absorbent to remove toxins in patients. An oral adsorbent (AST-120) made of porous carbon has been used to remove nitrogen toxins from patients with chronic kidney disease."** - Huaifa Zhang, Jake E. Barralet, in "Advanced Drug Delivery Reviews", 2017.

The Revival of Organs

The successful experiments in the resuscitation of life function to organs of dead animals, conducted by Dr Sergei Bryukhonenko at the Institute of Experimental Physiology and Therapy, Voronezh, Russia in 1940, showed that physiological functioning of organs can be resumed independently, and after being removed from the whole. The step in the understanding of this possibility brought the advent of organ transplant.

Thus it is realized that, the physical body will stop to work when there is necrosis of a vital organ.

Dr Brukhonenko research was vital to the development of open-heart procedures at the Research Institute of Experimental Surgery, where Professor Alexander Vishnevsky performed the first Soviet open-heart operation in 1957.

This understanding then led to the world's first human-to-human heart transplant performed by the cardiac surgeon Dr Christiaan Barnard on the 3 December 1967.

Causes of Physical Death

"There are occasions, or circumstances in the physical environment in which the soul, upon meditation or disappointment, can be an influence to the soul, to take the decision not to live, in that particular occasion. For, life itself is a manifestation of God. Thus a soul, may hold on to life so long as it wills to obey that which is the consciousness as to the relationship of the soul to life or God. Man may seek to give names to many of the conditions that arise in the experience of the young or children. For, as is known, the greater numbers of the changes are during the 1st, 2nd and 3rd year of experience in an earthly plane, because of disobedience upon the part of one or the other, or both, such as to cause conditions that make the desire on the part of such a soul not to maintain the consciousness in materiality. Thus it seeks ways, manners to return to that effacement, and enfacement, in which its conscience at that period becomes aware of. For, remember: death in the material plane is birth in the spiritual-mental plane. Birth in the material plane is death in the spiritual-mental plane."

Chapter 73

Psychology of Life

"In the beginning was the Word, and the Word was with Him." *- John 1:1*

The spirit of matter, its source is life, or God.

The Connexion Between Theology, Psychology and Physiology

"Theology is the science which treats concerning God.
Psychology is the science which treats concerning the soul.
Physiology is the science which treats concerning life, as Anatomy is the science which treats of organization.

These 3 Sciences, however, may all be considered as treating concerning life.

1. Theology, of life as it is in God; for God is Life itself.
2. Psychology, of life as it is in the soul, or rather the spirit; for the functions of the spirit constitute its life.
3. Physiology, of life as it is in the body.

Thus physiology treats of outward or natural life; psychology, of inward or spiritual life; Theology, of inmost or Divine Life.

Hence to separate Physiology from Psychology, is to separate natural life from spiritual; to separate Psychology from Theology, is to separate life as it is in the spirit, from life as it is in God; that is to say, in both cases, it is to separate the streams from the fountain-head, the effect from the cause, the creature from the Creator.

Now it is said of the Word:

"In Him was life, and the Life was the Light of men." *- John 1:4*

To separate therefore the life of the spirit and the life of the body, from life as it is in God, is to separate them from light itself, that is to say, to involve both in darkness; and, as a necessary result, to consign over both to mere conjecture, mystery, and error; in which case, theology will derive from psychology and physiology, nothing but erroneous illustrations and the two latter will derive from

theology nothing but absurd speculations.

Hence, each of the three sciences will form an antipathy to the other, and declare itself independent; or, if one unite with the other, it will be only on the ground of their common obscurity and error.

Let us first speak of God, then of the soul or rather spirit of of man, and lastly, of the body, in relation to life." - Rev. Augustus Clissold, AM in "An Introductory Lecture addressed to the members of the Swedenborg Association, 7 December 1846.

The Psychology of Life, is given in the Gospel of John.

That Is the Psychology of Life!

Man has the Power to Heal, by his Touch, by his Word, by his Eyes, by his Thoughts, all he has to do; is to believe in it.

"The Soul cannot die; for it is of God!

And the Body may be Revivified, Rejuvenated."

Concluding Remarks

"Few people continue to improve in later years for the want of energy. They never try an experiment, look up a point of interest for themselves, make a sacrifice for the sake of knowledge. Their minds, like their bodies at a certain age, become fixed." - Benjamin Jowett, in his Introduction to Plato.

"The truly learned Dr. Friend (Hippocrat de morbis populariter) have set the Practice of Physick, in acute Diseases, in so clear a Light, and have so Demonstratively supply'd what was left, as wanting, by their Predecessors, in that part of our Art; that he must be very Lazy, or very Dull, who may not form to himself clearer Indications, and more distinct Views in this difficult Work, than could have been readily framed till now.

And the worthy, and learned, the President (Sir Hans Sloan) the Censors, and other Fellows of the College imployed, have lately supply'd the World with a Body of Pharmacy, and Forms for Shop Medicines, the most Simple, Neat, judicious, and Copious, that ever yet appeared in Print which will exceedingly promote the Practice of Physick in general.

But Chronical Cases fly great Towns, their Hurry and Smoak, and rejoice in Country Air, Diet, and Exercise; and generally, all those who suffer under them, at one time or other, land here at Bath as the last resource." - Dr George Cheyne, MD in "An essay of the true nature and due method of treating the gout", 1723.

"There is a wisdom in this beyond the rules of physic:
a man's own observation, what he finds good of, is the best physic to preserve health." - Sir Francis Bacon in "Of Regiment of Health", Essays, 1858.

"The arguments we have presented can be applied equally well to most pathological conditions not mentioned here.

Successful treatment of many diseases resulting from imperfect drainage consists of a well-balanced diet, suited in quality and quantity to the needs, rather than the desires, of patients.

The outgo must keep pace with the intake.

Any other treatment that stimulates activity and does not enervate may effectively relieve venous congestion and lymph stasis.

Well-regulated, methodical exercises and general hygiene are very important preventatives supplementing any other form of treatment.

We should look well to our drainage systems and thus prevent the rapid encroachment of diseases in middle life which are now taking as great a toll of human life as did the plagues of old." - Dr George S. Weger, MD, "The Genesis and Control of Disease", 1931.

"There is, unhappily, no unity at all in the scientific world, new things and new ideas are always abhorred by the majority of workers". - Dr H. C. Muller, in "New York Medical Journal", 9 September 1911.

"It is to be hoped that those "doubting Thomases" who feel that they must criticise this paper will do so with freedom, and if they feel that the author has made statements which cannot be supported by those whom they revere as authority, that they will not hesitate to do so, and the author feels safe that he will be able to show them that they have neglected, to make themselves familiar with those fundamental principles, well proved by men of unquestioned integrity and ability, which will show them that he has behind him authority of ancient date, as well as recent, which they, through neglect or the vicissitudes of general practice, have allowed to pass into innocuous desuetude." - Dr John P. Arnold, MD, in "The Dietetic and hygienic gazette", Vol. 20, 1904.

"Only by the growth of mind and soul is a nation great and free, only by seeking the truths of Nature and integrating them into a unity can we rightly belong to the kingdom of life." - Sir George Newman, KCB, MD, in "The Lancet", 12 May 1928.

"Where a truth is made out by one demonstration, there needs no further inquiry; but in all probability where there wants demonstration to establish the truth beyond doubt, then it is not enough to trace one argument to its source and observe its strength and weakness, but all the arguments, after having been so examined on both sides, must be laid in the balance, one against another; and upon the whole the understanding determines its assent." - John Locke, FRS in "Of The Conduct of the Understanding", describing how to think clearly and rationally, 1706.

"This doctrines have guided my practice many years, and experience has taught me not to distrust their truth, safety and value." - Dr W. Beach, MD in "American Practice", 1851.

"Let us make it the largest and most complete sanitarium of the people, and tell the physicians of our country, of the possibilities of this place and its scientific indications for the sick." - Dr Hans Froelich, MD, in "Hot Springs Medical Journal", 15 February 1894.

"You must get your patient well, stop his pain and send him home sound and well from head to foot." - Dr A. T. Still, MD, DO, in "Journal of Osteopathy", November 1899.

"We all are born in this life with a mission, and in general, that mission is to help others." - Rui Alexandre Gabirro

"Criticism, unless it be constructive, is usually of little value." - Dr Alfred J. Zobel, MD, FACS in "The American Journal of Surgery", December 1921.

"These being in my humble opinion, the only safe and satisfactory conditions of an induction so vitally and diffusively important as that of a fundamental principle, to which we may rationally hope to subordinate all the more particular observations and experiments that are to form the superstructure of hygienic and therapeutic science." - Dr Joseph Peel Catlow, MRCS, in "On the principles of aesthetic medicine, or, The natural use of sensation and desire in the maintenance of health and the treatment of disease, as demonstrated by induction from the common facts of life", 1867.

***"The burden of proving all the more so how are witnesses of a thousand witnesses, who deny them."** - Julius Clarus (1525-1575), Juris Consul in Axiom of Law.*

Measurements

Oj. = 1 pint
℥viij. = 8 troy ounces
ʒss. = ½ drachm
♏i = 1 minim
gtts. ij. = 2 drops
grs. x. = 10 grains

Weight and volume tables from the U.S. Dispensatory, 1876

Glossary

Active Forces: are created both by Hydropathy, Osteopathic Manipulations, Chiropractor Adjustments, and Neuropathic Treatments.

Lye: A lye is a metal hydroxide traditionally obtained by leaching ashes (containing largely potassium carbonate or "potash"), or a strong alkali which is highly soluble in water producing caustic basic solutions. "Lye" is commonly an alternative name of sodium hydroxide (NaOH) or historically potassium hydroxide (KOH), though the term "lye" refers to any member of a broad range of metal hydroxides.

Difference Between Emunctology and Medicine

Medicine so-called science: Treats Symptoms.
The Medical Trade, calls groups of symptoms "Diseases".
And creates a never ending list of **"new and emerging diseases".**
And because **not 2 human bodies are the same, like not 2 blades of grass are the same,** so the human body, and any animal creature, or plant live are the same.
Then, it should be no surprise to understand that; **certain individuals will show a differentiation in the manifestations of symptoms, from the exactly same causes.**
This, the Medical Trade calls "Rare Diseases", and as of March 2021 the Genetic and Rare Diseases Information Center (GARD), NIH, has a database list of 22,185 entry names of so-called "Rare Diseases".
In the United Kingdom, and the European Union many organizations and government institutions have been setting up to research into **"genetic rare disorders".**

Emunctologists know that Symptoms, are not Diseases.
So, the Emunctologist does not treat symptoms, it treats Causes.
Because, it is Causes, that produce symptoms.
You remove the Causes, and the symptoms disappear.

That is, in Essence:

The Foundations of the Science of Emunctology Practice.

"For to remain ignorant is to remain a slave." - J. A. Wayland

Should the Student of Emunctology reverse his/her comprehension upon the principles, and the manner, that the body restores itself to Health, or, that Medical Science should?

"To understand what is being given, reverse them!
We are not telling Medical Science what to do!
We are telling YOU what to do!"

And so spoke the Lord!

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