

Practice of Osteopathy

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P R A C T I C E
O F
O S T E O P A T H Y
B Y

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NOTES

B.10 3rd rib is practically 1st movable rib

Leprosy is quite contagious if you come in direct contact but is not infectious.

Treat Solar Plexus (stimulate) to reduce hemorrhoids and varicose veins, etc. also relaxation of all muscles of the body.

As a rule have scanty salivary secretion in wasting diseases.

Sugar in diabetes is never found in saliva or otherwise but in pancreas, and in eliminat~~ing~~ channels.

Rickets is a constitutional disease in which there is an inability of the blood to make fibrous tissue.

Only when there is a hypersecretion of the salivary glands do we have an acid condition of saliva.

Never use milk in mouth diseases unless some alkalinizing substance is also given

B. Lime water freely with milk prohibits great acid changes.

Rheumatism represents an unbalance between secretion and excretion.

General treatment always in tonsillitis.
Best treatment is splanchnic in constrictor field.

Thyroid bodies control N. Metabolism.
Adrenal... " " CHO "
Reduce N. food to Mina in goitre.

In periodical tonsillitis, look out for pelvic disturbances in female and liver disturbances in male.

When mucus purulent or mucin is in blood look for a low grade of proteid metabolism.

Heat production is a physiological process and its field is in the nervous system.

N.12 2-3 E. Vaso M. (eye, face, nose, etc.)
 constrictor.
 2-3 D. Vis M. eye inhibition
 2-3 C Vis dilation articulation

Vaso Motor system is weak in the head, eye, etc. lunge, kidneys, pelvis, therefore eye troubles very frequently associated with pelvic disturbances.

Worms- Boiled milk tends to separate mucoid substance from walls of intestines and that separates work from its station.

Meningitis- Always have patient to lie on face all you can to relieve spine of blood, heat, pressure, etc.

Use alkaline waters freely in all skin diseases owing to the tendency to acidity.

Splanchnics pass through sympathetic system but do not terminate in sympathetic system.

Internal secretion of Pancreas deals with fats and excretion of Pancreas deals with Carbohydrates. Pancreas protects system against Carbohydrate toxemia, therefore increase fat element of food.

B.13. Urticaria can be carried by milk drinking.

Poste, gang. rep. trophic centers for cord. Ant horn cells rep. trophic centers for body.

Herpes is expression of So. Cd., cell condition. All the secretory disturbances and all the herpes conditions involve cerebro spinal fibres.

Claneroid is an attempt of nature to rid the nerve terminals of the toxins.

meningitis often develops from keeping patient in bed on the back.

Arterial blood resists heat, therefore, there is little danger from sun stroke. Venous blood absorbs heat, therefore, sun stroke is easy and common.

Dermatitis is Lymphatic disturbance primarily

Book 14. Hypertrophy of skin in Psoriasis represents a separate process.

There are two forms of freckles. 1. Those coming from direct rays of the sun. 2. cold freckles, incurable, existing all year round.

Simplest and best lotion is lemon juice. Pure if skin is normal. If skin is thin mix Lemon juice, glycerine or rose water. Pain the freckles each morning with above.

The free massage of skin surface (dry) where deeply seated the pigmentation goes down deep into orium layer of skin. Cut tomato and rub into skin.

Horse radish is a #1 rubbed on but follow this by using butter milk.

Scrofula involved thorough perversion of functioning of lymphatic system. Not tubercular but generally associated with syphilitic, etc.

Lime water assists lymphatic system to eliminate tubercular or leprosy toxins juice lime water.

TOXICOSIS.

Notes by J.M. Littlejohn.

1-30-1909

The Physio-Medical School does not believe in the use of poisonous remedies.

The Homeopathic School does not believe in crude remedies.

J.M. Littlejohn believes the system can be poisoned in two ways, namely; - crude and metabolic.

We lay down the fundamental proposition that the native resources of the body are sufficient for cure of the body.

Antitoxic field; - Purpose is to bring from diagnostic and therapeutic side, poison in the system and ways and means for getting this poison out of the system.

Question is, what marks crisis of disease?

Crisis is marked by the point where the germs have generated sufficient of their own toxin to kill themselves, the bacteria die in their own secretions, the only physiological germicide possible is produced by the germs themselves. This is what is meant by disease being self-limited.

On this basis, Dr. Hale, claims drugs have first; Principle action depends on crude substance, second depends on dynamization, e.g., Nux Vomica produces in crude form congestion of the spinal cord. Result is voluntary muscular spasm. If drug is given to point of reaction it produces paralysis of spinal centers and muscles, this paralysis represents defensive condition of organism. An attempt to retain toxic action of drugs results in functional paralysis.

Drugs have either direct or reflex action, direct means contact with and direct effect on bones and tissues. Reflex means through nerve distribution. The drug acting pathologically through brain or spinal cord and on some part through the brain and spinal cord. The action then ceases, the nerves act by reaction through central nervous system, e.g., If Hg. has been in contact with nervous system biological test can be had.

The principle of anti-toxin. Its action is physiologically correct.

Criticism of J. M. Littlejohn on anti-toxin as related to mode of transmission.

Nature in throwing off diseased products, produces substance, the debris of disease. Nature takes all dead elements from the system and concentrates these in abscess, pus material or some other discharges. Result in blood is that mucilaginous material is found, toxic material being in combination with mucin. This represents elimination from organ to save the organism from destruction. There is no disease not associated with eliminative processes, e.g., So called virus of small-pox is not virus of small-pox but toxin eliminated from small-pox system. This is so called virus eliminated represents salvation of the system from death, this material is elaborated to prevent the system from being destroyed.

This anti-toxin properly used in relation to toxic condition of the system would produce complete purification of the system, the organism producing its own defensive substance. This substance being found in the blood simultaneously with the following all infectious diseases,-

Basis of this theory is laid in physiology of ductless glands, e.g., Super-renal bodies elaborate a secretion which enters the blood and becomes an essential factor in formation of oxyhaemoglobin. This represents an albuminous constituent of the red blood cell, and in disintegration of red blood cell it is found in micro-copular elements. These elements in the liver supply the tissues as follows;-first with supra-renal secretion as basis of tenicity, second with an albuminous substance for the reintegration of tissue, third with oxygen for metabolic processes, fourth with an anti-toxic albumin as an immunizing substance.

Thyroid bodies furnish secretion substance that enters lymph stream, from thence it is thrown into the blood, when it reaches the lungs it unites the oxyhaemoglobin of blood, this product is also carried in disintegrated red blood cells into the microcorpuscles to the

tissues, this supplies tissues as follows;-

(1) Thyroidine which acts in conjunction with adrenalin in maintaining and prolonging tissue tonicity. (2) In conjunction with nucleo-protein of platets of the blood it with the platlets. It stimulates process of Oxidation and proliferation of substance from neuclus to cell body. This substance is identical with the opsonins of Wright. and agglutinins of other pathologists. This substance acts directly as substance to Ammunity.

The pituitary body is a detoxinating gland and has a sensative part between the anterior and posterior lobes, influenced by drugs and poisons taken into the system. This may be called the drug center of the body. This part of the body is closely related to the throid and supra-renals by direct nerve paths and as such nerves as center of function and correlation between these bodies. (1) Coordinating multiple activities of secretory glands, the activities being those antagonistic in action, that is, constrictor and dilator. (2) Controlling production of all anti-toxin in internal secretion field. (3) Regulating through the production of thyroid and supra-renals, via lymph and blood channels, the general oxydation process of the organs.

The pituitary glands act as great oxydizing organ or heat producer.

When isolated by nerve division febrile temperature becomes impossible even under pathological action of toxin or pyemic substance.

(4) It also controls and regulates quality of blood and lymph, e.g., in the lower animals as in the sea-urchin these organs control the water supply and purify the water when it is received for nutrition or nutritive purposes.

In the human subject the pituitary body acts on the blood and reacts to it especially when toxic substances are present. Reaction operates as irritation to the centers and this produces toxic fevers.

These centers then react on the suprarenals and thyroids with stimulation to elaborate certain anti-toxic substances. Drugs, (toxic), or waste substances in organs stimulate these centers and the center operates on these sets of glands to furnish blood and lymph with certain anti-toxic substances. These operate in two directions;-(a) to increase constituents of the blood and lymph along lines of protection from toxic action. (b) stimulate metabolism in tissues and organs. Pancreas furnishing fermentative products and blood and lymph and bone marrow furnishing leucocytes. These organs all act as defensive agents for anti-toxic processes.

Thyroid secretion prepares toxic agents for destruction, operating as an opsonin to make material pabulum for phagocytic action.

Adrenals produce products which stimulate oxygenation of proteid compounds producing heat. Ferments of pancreatic secretion produces disintegration or digestive action or stimulation to extra and internal secretions. Net result is destruction of toxic substances or agents and converting them into immune products that are capable of elimination.

This explains the pancreatic action of Beard, in relation to cancer, (a) pancreatic and internal-secretions thrown out into the splenic vein and supply a stimulating product to the leucocytes, (b) the substance that enters into the cells or tissues to make them active in the field of anti-toxic action.

The entire subject of modern physiology along lines of internal secretion prove the correctiveness of this theory, e.g., the vibratile processes are all graded by increased metabolism because oxydation is stimulated from pituitary center by tonicity, (2) this confirms the bacterial doctrine that foods specially prepared with heat and moisture are the essential conditions to germ life. (3) this is in line with the physiological doctrine that rise in temperature from above normal where germs are present, if the defensive measure, the heat tending to kill the germs. (4) this is in line with the fact that high or low temperature represents greater liability to death because of excessive stimulation to anti-

toxic products that produce detoxinating effects both on tissues and blood cells. (5) this explains the pathology of hemolysis.

In the structure of the red blood cell we find delicate membrane surrounding the cell protoplasm, this maintains the corpuscular unity and prevents the discharge of contents and maintains hemoglobin isotonicity. This mechanism is liable to change or destruction especially, (1) under influence of heat, this takes place in sun stroke and heat stroke. (2) under chemical influence of toxic substances.

In impairment of membrane hemoglobin is thrown out and becomes diffused in the plasma field. Corpuscles become pale and may ultimately lose entire structure. Free hemoglobin is thrown into the tissue fluids and secretions of the body when this takes place to the extent of staining tissues we have hemolysis and the substances converted in this process are called hemolysines. There are two types of hemolysines, (1) the inorganic substances, amonis and ether. No substance that modifies the isotonicity of the blood is hemolytic. (2) the organic substance and secretions of foreign organisms and blood and secretions of normal body when abnormal in composition.

In testing blood from hemolysis stand point, the blood is extracted as free from disturbance as possible and when patient is as free from excitability and kept from change of temperature as possible, as temperature has effect on corpuscles. To preserve blood in its normal condition, if it is to be kept, it should be shed into alcoholic solution, (75%---80%) If possible best way to take blood for examination (a) subject it to a centrifuge, to separate the plasma from the corpuscles. (b) if blood is to be kept place it in solution of sodium citrate, (c) in case it is shed into alcohol have bottle well corked and it will keep for a few hours. (6) This explains why addition of crude drugs in medication or injection of virus into the system produces an alternative action which is detrimental to the patient causing, (a) rise in

temperature beyond the control of the anti-toxin centers. (b) destruction of blood cells, (c) destruction of tissue cells. (7) It explains manner in which acute disease is converted into chronic. When the exaggerated and altered action becomes established the system becomes subject to persistent reactions instead of normal action of anti-toxic processes which cooperate with the thyroid, supra-renals and pancreas. Reaction takes place in the blood and lymph of these defensive agents, e.g. chronic rheumatism, arteriosclerosis, and degeneration of nerve cells. (8) This explains the diagnostic value of the blood test, this being in line with the defensive capacity of the system. (9) It gives new value to the so called opsonic index. If supra-renals and pancreas are continually producing anti-bodies, these appear as opsonins. It explains blood test and elimination when we come to use these as forces to expel toxic agents from the organism.

2-4-1909.

The principle that underlies the theory of anti-toxin is what is called vaccination theory. This vaccination theory was practiced as a system of inoculation. first, experiment was with virus of small-pox inoculation in normal and healthy patient, in 1718. In 1798 Jenner substituted cow-pox for virus claiming that cow-pox was similar, if not identical, with small-pox virus. The Pasteur Institute have used the same principle in inoculation of rabies virus. In modern times we have bacterine or attenuated bacteria. The first evidence we have is by the application by a French physician in 1880, who attempted to make animals immune from anthrax by heating the blood of an animal to 150 degrees and inoculating into the animal as anti-bacterine. Pastuer used the culture of the germ instead of the germ itself. First culture was killed, attenuated 40 degrees C., follow this by injecting another culture every two weeks.

In 1891, Kock discovered tuberculine. For ten or twelve years Kock's tuberculine was used and was finally set aside.

In 1902, Wright formed the opsonic theory,

or foundation for the vacinosis. These opsonins are defined as substances existing in the blood and tissues that act on the bacteria to prepare them for phagocytosis. According to Wright, these opsonins were decreased with the development of an infectious disease. (2) These substances can be increased both in the body and tissues by inoculation with dead bacteria. The opsonic index has been criticised but those who have practiced the opsonic theory believe in it as true.

(1) These opsonins are always present normally in the tissues. (2) They are always subject to diminution in infectious and contagious diseases. (3) They can be increased by the application of the principle of physiological immunising. (4) They are very easily destroyed by heat. This explains relation of the absence of these opsonins in the febrile states. As temperature rises these opsonins are decreased. (5) These opsonins are very quickly destroyed after they are separated from the living molecule. (6) Some have claimed that by the use of heat or by application of hyperemic treatment the opsonins can be increased, the same is true of Osteopathic treatment for either treatment stimulates the blood and circulation. In all of these cases, reason for this is the opsonins which have been in the tissues are extracted from the tissues and added to the fluids by increased circulation of blood. According to common conception of vaccine therapy from the time of Jenner, to the present date, a vaccine supplied from the heterogeneous field is all that is necessary to deal with infections and contagious diseases.

Dr. J. H. Littlejohn's point is that according to physiology a vaccine to be effectous must be autogenous, that is formulated in and prepared by the organism itself. This point is conceded by some of the best writers in the medical field.

Dr. Geldastene, says, " That he has been

unable to attain any result from stock vaccine but as soon as autogenous vaccine is used there was marked change in the patient's condition. One trouble in that field is that the manufacturer of biological products places his goods on the market and are sold and exploited to the public as medicine. The indiscriminant use of these vaccines is due to the ignorance on the part of those who use them and laziness on the part of others who do not investigate them.

In order to understand the use of these vaccines there are two conditions, this has never been done in the field of therapeutics. We must differentiate, (a) auto-intoxication, (b) hetero-intoxication, (c) between the conditions that are involved in bioplasmic and metabolic poisoning.

After poisoning exists on the metabolic plane, whether bacterial or toxic the vaccine therapy as applied is valueless, because when poisoning is on the metabolic plane it is outside of the tissue field and no influence can be exerted on an extra-tissue condition. That is the tissues of the body must eliminate poisons themselves. When we have diseased body and examine the tissues microscopically we have not reached the center of life when we have found a visible force that binds the organism together. Back of all visible structure is hidden this power of life and living matter, and of relations and correlations that we call life.

According to this there is in human body an invisible force which exerts its influence from within outward and in all processes of life whether in health or disease.

Another point is, man is a part of the universe and all that is inanimate or animate is a part of man. The main force lying back of all animal life and also human life. Man's body from life side is nourished and perpetuated from contributions from nature, minerals, and animals.

The proximate principles of the body represent a complex combination of these elements

that are found in nature. When these elements are combined under the influence of the invisible force we find two distinct planes of difference in the complex combinations, metabolic and crude plane, in which crude materials are disintegrated, altered, and reconstructed.

In the preparation of materials which are suitable to build into the body, the bioplasmic plane into which the crude reconstructed materials are admitted by action of this invisible force and when admitted these bioplasmic materials form part of the cell constitution. Into this refined cell life only the most perfect of materials are admitted, because this cell life consists of the center offocus under the dominant influence of the invisible force with side chains of proximate principles extend out of the limits of the cell. They form when properly combined the bioplasmic structure of the organism, in this field of bioplasmic life molecular affinity binds together the constituents of the molecule. There fore while there is central principle we call life the bioplasm is bound together on lesser basis, the molecular plane or on the physical force plane.

Just as the vital force binds the body into unity, the lesser force binds the body into bioplasmic unity.

What is this lesser force? It is vibrating force of the substance that form the constitutional constituents of the bioplasm, that is, each constituent element supplies force either positive or negative. When crude material substances pass from the metabolic to the bioplasmic plane they pass as reconstructed and vitalized materials. (b) This vitalization consists in the furnishing of such substances that are its vibratile equivalent in its force field.

The molecular force of each body is different from every other body, because in each body they represent the sum total of the vibratile forces of the constituent substances.

2-11-09.

1. In dealing with kind of food to replenish the body we are dealing with crude materials, these materials are; - Oxygen, for heat and the refined materials are used in bioplasmic field in connection with assimilation. In dealing with toxic elements taken into the body with food or ^{or} poisons, either forming with it in the body or without we are dealing with these poisons on two planes. (a) On the metabolic plane in connection with organs which have a detoxinating or anti-toxinating action. Function of these organs is to balance and keep the integrity of the organism. (b) On the bioplasmic plane in connection with reconstructed materials that enter in the composition of the structureless composition in connection with the constituents of the cell.

Here we must note. (1) The constituents of the materials as refined in another or lower animal basis or on the basis of organic human tissue. (2) While vital force of organic life keeps all constituent parts in the organism and each material minute or negative contributes its force equivalent in the molecule and the sum of these forces makes up the vital force in the combination of cells. Hence if we are dealing with poisons. (a) On the metabolic plane we must deal with it by its toxic counter equivalent. (b) On the bioplasmic plane we must bring such a force on the particular substance in the reconstructed combination that this combination will be broken from the molecule side before organism can throw it out.

This is the reason why we use the principle of trituration in the preparation of molecular equivalents as mineral, animal and vegetable equivalents.

The principle of dynamization brings out, the force of substances on the same plane is the force of the organism, on the preparation is the equivalent as anti-toxin of the substance. (a) We transfer substance force from substance to a media of dynamization.

(b) From the media of dynamization to media of administration. (c) From media of administration to nervous system, as a media of vital expression within the organism.

Every substance has a definite quality and it is the quality of the attribute of the substance we use in the anti-toxic field. On this principle it is claimed that the use of certain substances develops certain characteristics, hence in preparing force equivalents we must take account of these two things;-(1) The system may attenuate substance itself, this is proved by the anti-toxication, via, serum of the horse.

Dr. Ford has demonstrated that immunity to poisoning by toxioidendron, (poison-ivy), can be produced in same way as immunity of anti-diphtheritic anti-toxin. His method is using the fluid extract of the blood and injecting in the blood itself, in this case he has rendered animals immune to this poisoning and has demonstrated that serum of such animals becomes anti-toxic and would neutralize even a vital dose used by some animal. This can be transformed into a cell equivalent. In the method of preparation we have the following, crude chemical drug, and trituated secretion of milk. One part of the drug, to nine parts of the secretion of milk and triturate for one hour. One part of this is taken with nine parts of the secretion of milk and triturated for one hour. Any other form we take pure drug in chemical form and attenuate by taking one part of the fluid drug and nine parts of distilled water or alcohol 85% and shake this combined solution for a few minutes. This represents one attenuated decimal.

One part of this to nine parts of distilled water or alcohol and water equal parts, or alcohol and shake. This represents the second decimal trituration or attenuation. This can be carried as high as desired.

Basis of this theory of force action has underlying it the most fundamental principles of physiology and chemistry.

From heat to light and from light to electricity and from electricity to radiance. These radiant principles have this fact, that the highest of substance represents the highest grade of vibrility.

The method of action of these substances in the animal system is that of electrolytic dissociation. According to this principle of attenuation is method of changing from the crude to the refined in which we have lost the crude.

(1) The physical theory of electrolytic dissociation is the basis of anti-toxic action. Matter in solution consists not of the divided parts of the original substance in the molecular form but the molecules themselves are dissociated into their electrolytic equivalents. Physics calls these ions and these represent atoms or groups of atoms which possess electrolytic power of the substance from which they are derived. These are of two kinds positive and negative. The splitting up into ions is dissociation. Process and purpose of this is to convert by vibratile action the equivalent forces of the substances represented. The extent of this dissociation depends on extent of solution. Where the solution is complete there is none of the original molecules present, all molecules being converted into equivalent ions, e.g., a solution of potassium-chloride ($K=Cl$) made by water does not dissolve and cause a suspension of the potassium-chloride molecule but it consists of ions of potassium, (K), and chlorine in solution in water. The solution must be carried to the point where the molecules are completely dissociated. This is reason why attenuation must be carried to a certain point before we have lost crude molecule and come to the dissociated ions.

When dissociation is complete then the parts of the molecule are lost and nothing but ions of molecules are left. One interesting point is, that properties of the substance or substances of the incomplete solution and properties of the complete solution are not necessarily the same. The complete solution

has certain properties that depend on the ions and not the properties of the crude molecule. These are properties of the complete solution and all properties have positive and negative qualities. It has these dual properties characteristic that these solutions have their anti-toxic action.

Electrolytic dissociation produced by attenuation is the basis of the use of the principle of positive and negative electrolytic affinity in the anti-toxic field the degree of this electrolytic anti-toxic action depends on the degree of attenuation. All attenuation substances therefore are attenuations of ions and these attenuation contain combined positive and negative electric characteristics. When these are introduced into the system they operate by virtue of the characteristics of the ions entirely distinct from the crude molecule of the original substances.

2-18-1909.

(2), (a) Question is how do the ions that are dissociated in electrolytic processes operate in the animal organism? Answer is, the changes represented in the animal organism chemical reactions. That is there is no molecular action in the chemical sense. The action is not upon the tissue or cells of the tissue but upon the nuclei of the cells. This action is dependent largely upon the action of water in the cell nuclei, water represents 97-98%. This makes it possible for the ions of the substance in solution to operate in the field of the cells. The ions of the substance acts on the ions of the cell. This brings the ions action into the field of the living substance of the body namely bioplasm rather than protoplasm. Result of this action in the field of the cells nuclei is to determine certain cell changes into the nuclei field, to modify nutritive processes that are determined for the nuclei upon protoplasmic substances of the cell, hence the therapeutic action

of the ions in complete solution represents a functional activity operating on substances with-in the body through a force that is generated by a disassociation process in the field of the nucleus.

(b) All substances introduced into the body have a dual action, which are primary and secondary actions. The primary actions represents the toxic reaction of the crude substance. The secondary action represents the force reaction through what ever centers of force we find within the organism.

Dr. Schmidt says, "Each blood cell in the body contains a one billionth part of a grain of the potassium chloride salt, that is the potassium chloride salt in each cell represents a one tenth decimal tritiation dilution of the potassium chloride salts and if this is true, then all the potassium chloride salts which we claim as proximate principles are represented in their cell distribution in ion form. That is the crude potassium salts in organic form that we find on the metabolic plane are found with in the bioplasmic plane in the form of dilution of the tenth degree.

In the crude substance field the molecules of the substance are not dissociated and all chemical reactions are based on molecular action, hence a solution of the crude substance represents:-

(1) The solution of the molecule, the mode of action of these solutions, the mode of action of the molecule, the molecule operating through the blood upon the nuclei of the cells. It is this molecular action that causes paralysis, etc. e.g., In those drug substances that operate by paralysis of the nerve cells.

(2) The action of the crude substances is directly opposite to the action of the same substance in attenuation. According to this the action of the molecule of a substance on a cell nuclei differs from the action of the ions of the substance on the same cell nuclei, the one action being opposite to the other.

Experiments have demonstrated that the

molecular action on the cell nuclei is that of irritation but if the irritation becomes excessive then there is an inhibition of the functional action of the nuclei. On the other hand the action of the ions always stimulates functional activity of the nuclei, the conclusions then are:-

(1) A concentrated solution of a substance always acts on the molecular plane, the result of this action is always irritating, that is disturb, destroy, or to depress nutrition, that is molecular action is always toxic.

(2) The action of the dilute solution of a substance is the action of the ions of the substance or the effect of this action is always to stimulate, restore, or promote nutritive functional processes from the center of action which is the nuclei, that is the ion action is always anti-toxic action.

(3) The application of electrolytic action through ions is the basis of preparation of antidotes. All substances have always a dual action determined by the form in which the substance is found and method of preparation.

(a) The crude substance always has a pathogenic action resulting in disturbance in function and degeneration of structure.

(b) The same substance in its attenuated form operates in pathological fields along lines of restoration of the system to its normal functional activity maintaining normal healthy cell action and overbearing degenerative changes, that have been established in this structure, that is its effect in the antidotal or the throwing off of the disturbing actions of irritating ions.

(c) Not only are the attenuated ions of the action poison, active in the anti-toxic field but the attenuation of substances that are inert in the molecular field have anti-toxic action. This means that in the change from the molar to the ion form the substance acquires a force ~~xxxx~~ and this force has either toxic or anti-toxic action. This is the reason why attenuated substances represent dynamic action either on the toxic

or anti-toxic plane. The dynamic action is the action of forces in the field of the organism or its constituent cells. This dynamic action is in the line with the vitality of the organism and vitality of the cells as the constituent parts of the organism.

The crude substance is made by all molecules, the attenuation of the crude substance is made by the ions. The molecular substance is electro-chemically neutral, the ion attenuation are electro-chemically both positive and negative in action. This means that the ions have a dual action, that it have developed a new type of energy which did not exist heretofore.

This new type of energy is a new vibratile characteristic of the substance. This new type of energy represents a force that is ~~really~~ really the transmitting of energy in the physical forces.

Atoms that make up molecules are bound together by chemical energy. When molecules are broken up the atoms are dissociated and chemical energy is changed into electro-vibratile force or energy. The higher and finer forces of nature are all refined vibratile forces. This principal has been applied in charging water with radium, the radium representing an electro-vibratile force communicated to the water as a medium of communication and distribution.

According to this principle a substance in attenuation represents a force different from the energy of the original substance. This newly developed force is the force that is used in the dynamic field for antidotal action.

(4) Question is? What is the relation of ionization or dynamization to antidotal action or treatment? The crude substance has acted on the molecule primarily, if it has remained in the system it has been transmitted into the electro-vibratile or radiant force, that is every substance which has entered the bioplasmic or entered the nuclei, has partaken of the electro-vibratile characteristics of the nuclei field and become a part of the body on that vibratile plane. This is the basis of the accumulative action of toxin

accumulative action of toxic or poisonous substances, at least, in the field of bioplasm.

In driving out these forces from the body;-

(1) It cannot be displaced by atoms or molecules or groups of molecules.

(2) It must be displaced by electrolytic dissociation operating in the force field.

(3) This process cannot be carried on only from the ion side. So long as we are in the molecular field we are in the field of chemical energy, in the dynamic field, as electrolytic force.

(4) It is not the similar ion but the same ion that must ~~we~~ displace the original ion, hence the antidote is the equivalent of the original toxic substance, the toxic substance being on the molecular plane, its equivalent being on the dynamic plane. The attenuated equivalent therefore of the toxic substance represents the anti-toxic forces.

In line with this conception of toxicity and anti-toxicity we are able to explain why some diseases are hereditary, namely, because of the existence of the uncured condition of the parent organism.

Question is, What is reproduced? It is the characteristics of the parent organism and those characteristics are primarily in dynamic form and secondarily in substance form. What is there hereditary to tuberculosis? The hereditary factor is the low vibratile power of the organism from the nucleus side, the cells being abnormally relaxed, low recuperative power in the tissues, metabolism is at its maximum and bioplasm at its minimum, hence abnormal appetite in the tubercular patient supplying metabolism to keep up the accretion processes with inability in bioplasm to pull together these accreted substances and retain them as essential products of living organism. Result of this dissociation is that change of weather, climate, etc. prevents the bioplasm forces from operating in the metabolic plane or field. Result is tubercular body in which tubercular germs (which are degenerated bioplasts), operate

to the destruction of the organism. Tuberculosis is typical of toxicosis.

Here we have answer, why we eliminate poisons from the bioplasmic plane because so long as these poisons are present bioplasmic and metabolic processes are visciated. The only method of displacing the obstruction is force, that is in line with the great force of the body.

What is meant by the modern theory of the body defenders, the opsonins. It is rousing of the life forces to a point of resistance and point of expelling foreign forces that are disturbing organic life.

The principle that under lies the opsonic theory is one that has been developing from the start. The principle is, the product of the so called disease has the power to destroy the cause of the disease. This is the foundation of vaccination, serum therapy, etc., Object of vacine or serum is to stimulate the appetite of the leucocytes to stimulate phagocytosis. Vaccine is wrong because the virus is in its crude form. Serum is wrong because the vehicle is foreign to the body, e.g, lymph of some foreign animal.

Where ever respiratory apparatus is not normal the addition of horse serum is liable to result in death. From the opsonic index stand point this does not meet the conditions demanded. If serum of the organism is healthy all that is necessary to keep it healthy is to eliminate from the blood stream all fluids of toxication. If blood fluids modify the germ then the germ is subject to phagocitic action. This implies there is putrifaction going on in the body all the time in order that each group of cells can do its work. Each cell works on the basis of changing of proximate elements, the changing taking place in relation to the neuclei of the cell.

According to this vital force and energy is centered in the neuclei of the cells, hence in the cells which have a crude chemical reaction there is vital chemistry and this vital chemistry is differentiated; - (a) vitality as force, (b) the affinity force of the proximate principle elements.

Bioplasm is the foundation substance in the body composition, it is the foundation of the cells which are tissues and organs.

This bioplasm depends upon its enviornment for its functioning. The cell and tissue each

manifest their own vitality by expressions of vitalized force. Muscle by contraction, gland by secretion organs by normal function, but cells manifest vitality by force.

The complex totality of these make life expressions what we call living. When harmony is disturbed there is disease. Harmony may be disturbed by modification of the affinity and vital forces that bind bioplasm cells and groups of cells together. Here the molecule combination is disturbed by some action which is toxic. (2) Changed environment may change force of bioplasm so the response to stimulus becomes impossible. Result is a parietic condition. (3) Some obstruction may cut off response to the bioplasm of the cells and groups of cells. Here the avenues of nerve energy and distribution are obstructed with reactions that are abnormal on the fluids and tissues of the body. In these three fields lie the causes of those conditions we must meet in a etiology.

In dealing with these three conditions we require to have parallel conditions to overcome existing conditions of the organism.

We deal with modifications of the affinity or vital forces that binds bioplasm cells on the normal basis. Modifications in these affinity and vital forces represents toxicosis basis.

2-25-1909.

In explanation of the electrolytic disassociation we find this demonstrated from the stand point of chemistry.

Lodge, says, "Matter is composed of electricity and nothing else, electricity is both positive and negative, positive electricity is the mode of manifestation of a different portion of the all pervading ether and negative electricity exists in gases of the minutest part called electrons". From every kind of material some other kind of electron can be obtained.

All material represents force; matter therefore, from the side of chemistry is the expression of force and the kind of matter determines the nature of the force. We have in the substance of water (H₂O), different forces, the forces being represented by (a) ice, (b), steam, (c) water hot and cold at certain degrees. Difference lies in the action of each atom and in forces produced by this action. Force is developed in degrees according to activity.

Different kinds of matter represent different degrees of force on the vibratile plane.

Lodge says, "Different atoms from different matter are composed by same sort of way but have atoms such as each possess".

When we have substance in which there are 23 times as many electrons as hydrogen we call it sodium. If atom has 200 times we call it lead, if still more it has tendency towards radium activity. Each substance has its own force and index of forces. This index represents the force that is generated by certain number of electrons.

Lodge says, "The breaking up of complex atoms and resolution of atoms into simpler forms is all we experimentally can justify"

Force is the basis foundation of matter. In dividing matter we are eliminating material, and are emphasising force of the substance.

Crooks makes the statement, "Chemists admit the possibility of resolving chemical elements into simpler forms of elements, into ethereal electrical energy"

According to this chemistry recognizes these processes as processes of separating force from substance. In attenuation we divide and sub-divide until we set in motion the vital properties of the elements. In attenuation we dissociate atom from atom and electron from electron, that is, we get out force that bound substance together in the crude form. Physics, e.g., magnetize a piece of steel and from this we can magnetize another steel retaining the magnetic force that was originally derived from the magnet.

Force then is just as real as substance, if so, it is possible to convert one force from one form to another and use it for purposes intended with out loss of force.

Substance can be influenced by other substances. e.g., Hydrogen gas has force of contracting and expanding to the sense of heat and cold. In passing from gas to liquid state and liquid to semi-solid and from semi-solid to solid state the Hydrogen gas constituents make substances in the ascending scale of dynamic force. This is why Hydrogen is regarded by chemists as one of the strangest constriction agents in existence. This force is present in every substance and the purpose is to adjust vibratile and fermentative changes or both, regulating vibrations of life, color, etc., In this sense dynamic characteristics of the organism expressed through the white cells in connection with the growth of tissue of the body or of the electrons that are in the body and must be transferred through the media of the white blood cells.

This is the basis of the antidotal action of the so-called highly potensised or attenuated substances, the force having the power to remove the effects of the crude.

Dr. Downer says, "I was poisoned with what I had eaten in July (this being several months later) I found boracic acid, formaldehyde, etc., in the system. Knowing ~~ix~~ the form of antidote I began to take salicylic acid 50 minims and urine flowed for several days, took solution of borax 1 minim, boracic acid 1 minim, with this I got formaldehyde at 30-X I took a dose of this 30 minutes after dinner and fell into a 10 minute dose and was nauseated but no vomiting. When the storm was over my stomach was improved.

Dr. Skinner of London, says, "In 1874, when practicing in Liverpool, I had a patient who said she could not eat or even bear the sight or smell of mutton. When her friends ordered mutton she would have to leave the table. On Nov. 3, 1903 she was consulted and at that time had violent attacks of spasms of

pain in the eye, pain were knife like and there was feeling of horrid pressure on the left eye ball which came and went. On treating this patient reported some amount of progress in relief of pain but final symptom was she could eat nothing in the form of mutton and the smell of cooking made her sick having vomiting and nausea.

Same day as this I gave the patient one dose Ovinine 50-X to be taken at bed time on the tongue. This was all she got and now she can stand the smell and sight and can even eat the meat!

(Preparation of Ovinine, take the muscular fiber from the recently killed sheep and squeeze all the juice out, take one drop of this juice to 99 drops of water, take one drop of this last solution and 99 drops of water, carry this to the 50th trituration! Onedrop of this was the dose the above patient got.

In the reception of any toxic substance into the system the leucocytes take up this substance and distribute it through the system, e.g. Inject strychnin sub-cutaneously into the guinea pig and allow it to circulate 40 minutes, then draw the blood from the animal. The blood is then divided by the centrifuge, into red cells, white cells, and plasm. Injecting the leucocytic element the original poisons operate the same as the strychnin. Thus we are able to demonstrate that the white cells have the selective power in distributing the toxic matter. (a) If organism is normal, toxic substance goes to the liver and red marrow of the bones. (b) If organism is abnormal the leucocytes take the substance to the point of greatest weakness, tending to gravitate to the lower point of weakness. (c) These white cells seem to distribute by power of selecting certain substances to certain organs, that is there seems to be an affinity of certain organs for certain substances, e.g. Thyroid gland has affinity for Iodine and Arsenic. Skin has affinity for crystalline substances. Liver affinity for Iron, spleen for Quinine, Lymph for potassium, brain for mercury.

Why are these substances carried to these

organs? Because these organs are concerned in metabolic processes. If these organs can eliminate then there is an end to the toxic matter and its action. If they are not able to eliminate then catabolism produces certain catabolic products, it is these that enter into the nervous system. They poison the nerve centers and accumulate in the nerve cells.

The central nervous system represents center of life. The nervous system, elements are renewed in connection with food and force which operates in the center field. The nervous system and distributing channels represent an important field of anti-toxic action. Principle of anti-toxic action is demonstrated in diphtheritic serum. Here an amount of serum is injected into the horse, several days later it is taken from the horse and this is the attenuated toxic used as anti-diphtheritic serum. Here a similar quality of the toxin is injected into the human system.

The serum with this dilution represents anti-toxin. Physiologists and biologists explain this on the basis of organic reaction upon the toxic substance. the product being an organic antidote.

Here we note, (1) the necessity of high dilution, (2) neither chemically nor microscopically can the anti-toxin be detected. (3) Its anti-toxic action is visible only by biology.

Only difference in our principle is, that we take toxin and potentize it through an inert media as water, etc., instead of organic media. Organic serum represents foreign elements and is detrimental to the system into which it is injected. This attenuation can-not be demonstrated either chemically or microscopically any more than the anti-toxin of diphtheria. Only biology has action on organism.

This indicates that the nervous system contains a balancing power of chemical reagents more delicate than any chemical laboratory. To illustrate this point a man while eating bananas was bitten by a tarantula, the entire arm in a short time became inflamed,

shooting pains followed by burning pains up the arm and into the body. This condition was cured by 100,000 potency of tarantula.

According to the discovery of Bachamb the anatomical element in the organism which he calls microzymas represent the physiological and chemical changes that take place in nutrition. These represent the anatomical force in every cell. He has demonstrated the existance in the blood of minute globules consisting of albuminous atmosphere surrounding this as a nuclei. This he called hemato-microzyman-molecular-granulations.

The ordinary fibrin represents this microzyman bound to-gether in an albuminous atmosphere. This explains the coagulation of the blood, fibrin being found in the blood in fine granulation. Blood that is shed in a solution of pure alcohol diluted with water, $1/3$ strength will form, when washed out with alcohol, and exhibit numbers of these granulations. He found that red corpuscles consists of membrane, cell wall, inside of which are contained the microzyman as elements. The plasma on the other hand represents containing media of the blood, microzyman represents the vibrating corpuscles. Vibration among these representing physiological life of the cell.

This in distinction from Pausteur's doctrine, is the doctrine of modern physiology. The microzyman belongs to the strach field.

Three anatomical elements of the blood are white cells, red cells, and microzyman molecule. These microzyman-molecules while here the microzyman element of the blood represent blood and tissue life of the cells. All tissues being regenerated by special nutrition based on these microzymans. In embryology of these microzymans or the microzyman itself becomes the origin of tissues and basis of cell elements. Embryo blood consisting of salts, mostly water, etc., receives its nutrition from the vitalized elements. All elements of the blood come into existence to-gether and at the same time.

The same principle applies to the regeneration processes of the blood elements, being regenerated at the same time, the common basis of the regeneration being the microzyman or albuminous substances. The freely flowing blood in the vessels is in molecular form the granulations representing vibration, each molecular granulation having microzyman as the nucleus. The granulation surrounding the nucleus has an albuminous atmosphere, this atmosphere is insoluble in normal blood plasma. This nuclei microzyman represents the more delicate substance in the biological field.

These microzymans of the blood when found inside the vessels have an oxydizing power, oxydizing water, these are also living organisms not only in the blood but in the atmosphere close to the earth. As changes take place in animals by access of air these processes are destroyed by oxydation, carbohydrates, Hydrogen, and water, (HO) and at the same time microzymans are not destroyed. Hence proximate principles represent the persistently changing elements that are food for the cells.

The microzyman of the atmosphere represents the surviving germs that have ~~not~~ out lived living organism. Pathological germs represent diseased microzymans. Here we have laid certain principles, (1) All living bioplasm has basis in anatomical elements of the microzyman. (2) It is this microzyman that gives structure to the cells and tissues, (3) These microzymans are small living organisms in vibratile activity surrounded by an albuminous atmosphere in molecular form. (4) The globulin makes up the composed substance of the elements of the blood, cells and tissues. (5) All changes take place in the organisms in the field of the proximate principles under action and in the presence of the microzymans. All of the changes take place by fermentation, the microzyman giving origin to the fermentation process, as in digestive process, etc.

Hence any change that takes place in this life field must be in the nature of vibratile action or force.

3-4-1909.

(6) All of the changes that take place in the blood are of the hemolytic order, that is, in the pathological field of changes.

Ascoli, in 1901 followed by Crile and Weil formulated the principle that when certain diseases, like cancer, rheumatism, etc., agglutinated the red blood cells in the normal individual and that the red blood cells taken from the blood of another individual having same disease resisted this action. Normal blood is not subject to hemolysis. Same is true of the serum of the blood of persons having the disease, but in the severe type of diseases, cancer, syphilis, pneumonia, the serum of the blood becomes hemolytic.

Weil has demonstrated that the extracts from good tissues and extracts from tumors are hemolytic. This explains according to Weil, the cachexia and anemia of the malignant neoplasm, the cachexia and anemia being produced by toxins that are developed by necrobiotic processes that take place in the tumor field itself. Weil also tried to discover whether circulating blood of animals with transplantable lympho-sarcoma manifested the presence of toxic substances.

According to statement the serum of all tumor dogs is distinctly hemolytic than in non-tumor dogs. The blood cells of non-tumor animals are more refractive, that is breaking down less rapidly.

In a series of experiments in testing blood of cancer patients; - (1) The serum hemolysed foreign corpuscles, (2) The serum did not hemolys its own corpuscles. This was true in 50% of the cases of malignant and 33% of the cases of benign tumors.

Crile claims, that in all early malignant cases the serum is hemolysed and the corpuscles of the patient resist the serum and that of others. In his last statement Crile says, "That all cases, tubercular, etc., the patient shows an exact reverse hemolysis to that found in the malignant tumors, namely, that of the corpuscles of the patient to the normal serum. In benign cases the action is from corpuscles to serum and in malignant

cases from serum to corpuscle. This would seem to indicate a distinctly well marked differential point as between the cancer and tubercular toxicosis. It indicates that the field of toxicosis is in the blood and not any localized field in which the tumor or tuberculosis develops.

We have found that mixing red corpuscles of one person with serum from another patient produces certain reactions indicating that in cases of very severe diseases, as cancer, tuberculosis, syphilis, etc., there is a development in the blood, an iso-hemolytic property parallel to the normal blood iso-tonicity. The meaning of this is that normal blood maintains its iso-tonicity as long as the blood is normal, but when abnormal the iso-hemolytic property is established and the iso-tonicity is lost.

This iso-hemolytic condition then is the dividing line between abnormal and normal, that is it is the starting point of blood degeneration, as such it represents, (a) the blood basis of all toxicosis. (b) It furnishes physiological explanation of the cachexia of the malignant and toxic diseases. (c) Diagnostic value of this iso-hemolytic action is a good basis for differentiating serum in connection with diseases that may be called critical from those which are less serious. (d) The iso-hemolytic condition represents the fact that blood reaches a crisis in which it is put to test and subjected to the greatest strain in its effort to maintain the equilibrium of the blood in the tissue field. This equilibrium of the blood means that the serum or plasma of the corpuscles are homologous. The loss of this equilibrium means that the plasma and corpuscles are really foreign to one ~~another~~ another. A hemolytic process is a process of perpetual antagonism between blood corpuscles and plasma.

As life is blood, or in the blood it is simply a question of which one, the corpuscles or the plasmic elements, will maintain the upper hand. When one or the other has been subordinated to the other the patient must die, because blood elements have ceased to maintain

their harmony which is essential to the life of the blood and life of the patient.

Since 1901, hemolytic properties have been found in the tumor extracts, representing;-(a)The necrotic tumors which yield active hemolytic extracts, in this respect these necrotic tumors develop from (b) the hemolytic extracts which are found in non-necrotic tumors.

The main points of difference are;- (1) the simpleness of the constitution of the hemolytic extract. (2) The reaction to heat. Both of these are important factors in the development of critical diseases. The simpleness of the constitution of composition of hemolytic extract indicates that the substance biologically, represents a lower grade of life. This we know is true because the neoplasms represent biologically a much lower grade of life than that represented by life of a patient in which neoplasm develops. The reaction to heat represents e.g, in tuberculosis, the increased temperature of the patient which is indicated from the physiological side, that the processes of oxydation are very much increased. In the case of cancer, oxydation is all most suspended. Patient tends to develop sub-normal temperature and is cold and chilly. The serum and corpuscles of the animal becomes more hemolytic while the more stable the normal condition of the blood is the greater the resistance to hemolysis is found in tuberculosis.

As compared to cancer we find in tuberculosis the red blood cells are hemolysed to normal serum, while in cancer the red blood cells are not hemolysed to normal serum. This places hemolytic processes of the blood in cancer, tuberculosis, syphilis, pneumonia, as a most important factor in the field of diagnosis and this factor can only be brought out by a test of the blood and analysis.

Another point in the field of malignant diseases is *modus amorandii* disemix. Surgery in cancer is not palliative to its destruction, that is surgery in any case of malignancy is cause of rapid dissemination. The general theory is that secondary neoplasms result from

dissemination to parts that are remote from the field of operation by means of cancer emboli which enter the blood stream, lymph stream and venous stream. On this the theory of modern days is built.

Surgery that recommends removal of all malignant tumors is modern. If correct why are the lungs and spleen generally immune from such dissemination. It would seem reasonable that if there is secondary dissemination the lungs and spleen, representing the grave-yard of the body should be the first field to be affected by dissemination, instead we find the lungs and spleen are immune from metastasis.

Answer is, the lymph stream is generally involved in metastatic processes. Instead of cancer emboli which are blood products the lymph fluids and corpuscles are causes of metastasis. This explains why axillary gland enlargements are practically sequences to cancer dissemination no matter where cancer is located.

The real cause is the invasion of the lymph stream by the cancer cells or their products. This great lymph stream is the same with the entire body because lymph circulation is limited to the circulatory field and entire surface tissues of the body are bathed in it, hence cancer cells or toxins, (a) pass out into lymph glands, (b) pass out in the cutaneous field through sub-cutaneous mesh-work, (c) permeate the visceral field through lymph tributaries.

This theory explains a number of points which surgery and its theory do not explain;-(a) the almost universal presence of the arterial nodule on the skin of the cancer patient, (b) the miliary nodule that are always found on the serous and mucous surfaces. (c) the gland enlargement always found in cancer, (d) the facial dropsy in the arm in cancer of the breast and in the abdomen, in abdominal and pelvic cancers.

In regard to the growth we find in connection with malignant diseases;-(1) The neoplasm of the malignant order always contains substance that are foreign to the organism either as waste elements or toxic substances.

(2) In the metabolic field the relation of the neoplasm to the organism is that of nutrition or demand and supply to certain nutritive substances on the visciated basis. This point we must remember in dieting of malignant diseases, in the average case of malignant diseases fasting would be the best dietetic principle if the patient did not have condition of visciated vitality, but a fast for any time on the part of a cancer patient means death because of the visciated vitality of the patient.

In the dieting of such a patient we must remember that dieting must take place not from stand point of organism but from neoplasm. The cachexia indicates hemolysis, this property seems to maintain the red corpuscles. For some reason there is disintegrating tendency in relation to the red corpuscles with a splitting up of the corpuscles.

This explains mono-nucleated cells in cancer patient which represent normal immature red blood cells. It explains the presence of giant cells in the cancer patient. This represents the mono-nucleated cells blended in groups because of the lack of demand of the supply from red cell field. The blood cycle is broken and when link is disrupted other elements of the cycle try to protect the organism as near as possible.

This teaches us two facts of greatest importance;-
 (1) starting point of malignant condition is in red blood cells field. This starting point means the disintegration or dissociation process and in disease originally it is limited to the non-living field.

(2) When the malignant condition has become implanted in the system dissemination is transferred from protoplasm to bioplasm field. The struggle for existence when the organism of the patient is found, (a) among the lymphocytes in with the process of dissemination, (b) among the leucocytes in connection with the principle of protection. The leucocytes trying to destroy toxic substances and reconstruct on a new basis the fundamental bioplasmic elements.

According to this the theory of malignant diseases has two propositions;- (1) assisting the red corpuscles or the red cells in preventing hemolysis. (2) assisting the white blood corpuscles in the renewal of the bioplasm of the organism.

3-11-1909.

On the basis of this involvement of the blood corpuscles field, J.M.L. believes that the tuberculosis and cancer has a neoplastic condition which represents an underlying and deeper condition than the neoplasm itself, just as granulation conditions are expressions of deeper toxicosis.

The neoplastic cancer is expression of, or represents, the localized attempt at elimination, or manifestation, of a general condition dependant on the changes in the blood. The neoplasm is not the cause or primary condition in itself, but is the effect. In fact it may be described as net result of life time lesions and abnormal conditions, or in some cases result of hereditary influence that produces hyperplasia of the organism when it tends to ward maturity. That is, blood condition represent toxicity which can be proved, e.g, symtology of these diseases suggest the presence of some alkaloid in the blood.

When blood plasma is alkaline especially if alkalinity is excessive these alkaloids excites leucocytic action in the form of neoplastic growth.

Drs. McAlter and Ross, on the excitability of the leucocytes in the healthy person, find in the blood plasm of patinet with carsinoma this alkaline material which lies at the basis of toxicity.

In telling dead from living leucocytes they found that living cells placed on the agar-jelly containing in addition to the sodium citrate and sodium-chloride a certain element of the metholine blue and atropine-sulphate displayed certain peculiar characteristics.

By the use of stain (metholine blue) they found a stimulus of exaggerated ameboid movements of the leucocytes. In the alkaline jelly sufficient alkaline substance being used to diffuse with the stain there was marked stimulation of the movement only when the alkaline substance was present.

We have demonstrated that, tuberculosis, cancer, and some other diseases represent toxic and not infectious and germ diseases.

(1) Plasma taken from the blood, e.g., of a cancer patient does not affect materially the leucocytes of healthy blood. (2) By taking the plasma of blood of cancer patient and mixing with sodium-citrate and mixing with 1/10 volume of the mixture from a healthy blood there is produced an excessive excitation of the ameboid movements of the leucocytes.

The Drs. McAlter and Ross have demonstrated this same point and ~~xxxx~~ their experiments indicate; (3) that this excitability of the ameboid movement in the leucocytes are greater than that by atropine-sulphate, hence conclusion that some alkaline substances must be present in the blood when plasmas become alkaline. The result being the excitation of the leucocytes to activity. This points in the direction of and demonstrates the existence of toxic conditions in this type of patient. The explanation of this is in the field of nutritive processes.

In these processes there is cycle of development, this cycle represents the substance themselves and other anti-bodies. This chain or cycle is marked as physiology points out, by the field of internal secretions.

According to this principle Dr. J. M. L. finds in the original development of the body the same cycological principle. The ovum and spermatozoa when united produce the impregnated ovum and this represents the original mother cell, that is, potentially the new organism that will be evolved in the embryonal processes, by this division into the serous tissues and remain in the new being.

Defective conditions, therefore, in this original ovum and sperm factors results in morbid conditions,

these conditions are localized;- (1) in the different fields of the body structure according to the original defective condition of the ovum and spermatozoa, that is, bones, muscles, blood vessels, nervous system, may be imperfectly developed. That is, there is or may be an arrested development that dates from the primary origin of the organic life.

This is what we call Hypreplasia.

(2) This explanation and fact, or condition, has as yet been unexplained by any pathology we have at the present time. Here we have explanation of delayed puberty in either sex, and frequent failure to development in the sexness.

(3) In this case where sexness is not developed the organism remains neutral with incapacity of both regeneration and reproduction.

(4) This also results in the tendency to toxicosis manifested, e.g., in tuberculosis of the lung in hereditary tuberculosis, in the genito-urinary field in toxicosis of causation.

According to the old theory of cancer it developed in connection with embryonic cells which had remained embryonic from the period of embryonic life to the period of senility, then when the rest of the tissues became senile either prematurely or at the regular time the embryonal structures begin to develop rapidly at the expence of the other tissues.

This theory is false largely because it places the embryonal cell as a vagrant structure in the body organism. If however go back of the cell to the toxic condition, that manifested itself in a particular field of the body like tuberculosis and in the pulmonary field and in cancer in the genito-urinary field, we find toxic origin of these types of diseases. Why? Because in many of these cases where a so called hereditary neurosis the original defect was in the mother cell. The result of this upon the organism being deficient resistance of the tissues and therefore lower grade of tissue life.

(5) This means that there is something in the blood plasm which prevents blood as a tissue from

Resisting the action of toxin and germ. This is manifested particularly in pyemic conditions of the system, such as persistent leucocoria, which is simply a localized form of a constitutional pyemia. In this case the glandular and membranous structure in the particular field involved either refuse or fail to function normally. These cases of hypoplasia represent lack of development in certain parts of the body organism. In many cases the immaturity in body development being present before sex maturity takes place, this sex maturity is simply the exciting cause which brings to a focus in the particular portion of the body an actually preexisting condition.

The trouble therefore in this case is developmental, the nervous system being undeveloped with the result of mal-nutrition exhibiting itself through the failure in the tropic apparatus. This explains prevalence in brain and spinal cord diseases after puberty.

The primary condition is hyperplasia of the localized cell field resulting in (1) the inability to function normally. This explains many of the persistent leucocoria conditions due simply to the failure of the endometrium cells to function normally, that is, why we find the sub-normal, male or female, subject in which mature body does not develop to maturity but immature state persists so that the mature body is functioning as child organism. (2) the net result of this in a majority of cases is the degeneration of one or more structures of the body, this explanation, e.g., of glandular hypertrophy, in endometrium field, in the mamma field, in the ovum gland field, and in the tonsillar gland field, with adenoid growths. In all of these fields we have localized immaturity, back of which lies hereditary degeneracy and in the patient concerned the instability of the nervous system.

Here we find explanation of sub-normal types of nutrition, here we have the hypoplasia of the entire body, the bones, muscles, ligaments and nervous system being immaturely developed. This explains why lack of function, traumatism, over functioning tend to develop

a tendency to prevented metabolism, and neoplastic, of the rapidly developing types of growth, because it can-not raise developing structure to standard of normal tissue development.

We have seen cases, e.g., dysmenorrhea in young females, 26 to 28 years., due to hyperplasia of the pelvic organs back of which lies hyperplasia of the entire body and in this case the body retains its immature characteristics.

In patient of this order the neck retains its flatness of the child form instead of the rounded out mature neck, the pelvic bones and diameters are narrow as compared with the broad bilateral aspect of the thenormal pelvis in adult. In addition to this there is failure of development of adipose tissue and fascia these being the tissues that give roundness to the face, arms, hips, trunk in the male and female. It is natural then that in such conditions when external structure of the body is immature that we find undeveloped uterus, ovary, tubes and ligaments as well as immature organs to such an extent that when the organism attempts to establish or preserve changes of life, as menstruation where whole blood supply of the body simply flows to the pelvic organs instead of as in the normal case, the blood elements being secreted by these pelvic organs which represent normal menstruation. In such cases menstruation is impossible, and in some cases elimination is impossible.

This is the organic fundation to amenorrhea and dysmenorrhea and later to malignancy in the pelvic organs, mamma, and accessory gland field. This same principle can be applied to the male sex. The organs that are chiefly affected being the brain, as in typical epilepsy, the liver, as in typical constitutional hemorrhagic conditions, pancreas as in diseases as diabetes and Bright's Disease.

Foundamental basis on which these types of diseases are developed and the malignancy associated with all of these disease depend on the toxemia of the system.

3-18-1908.

The method and principle that we have

been trying to explain under the head of toxicosis has been called negative and anti-pathic, in opposition to this we have demonstrated that the principle has underlying it a chemical physical and physiological basis. In particular the principle is in harmony with the doctrine of physiology relative to organism and organism life.

Back of this principle lie such propositions which are;- (1) Nutrition in the organism cannot be based on anything that is foreign to the proximate principles of the body. (2) No substance can be of service in the field of therapeutics that is foreign to these proximate principles, e.g., serum, either lymph or serum proper from other animals. (3) Back of all matter and whatever in that is ponderable lies force which is the moving principle in whatever in that exists and operates as the original creator of matter and persists as the vital force, and in all of those which have what we term life. Here we have two differences between affinity force and vital force. The vital force lies back of all ponderable substance, the affinity force keeps together the plant elements in ponderable matter and prevents their dissociation. (4) All bioplasmic processes are entirely different from metabolic processes and the principles that apply to the former are different from those of the latter. Anti-toxin e.g., as used by medical doctors may be anti-toxin of diphtheria poison of guinea pig, but man is not a guinea pig.

When a child gets diphtheria the diphtheritic anti-toxin is simply a match that lights the flame among an accumulated rubbish in that system. Some of those elements accumulate for generations in the hereditary history of the child, the balance accumulating in the degenerating waste and lesions of a life time and the diphtheritic toxin takes a hold not of the pure, the purified organic products but of the dissipated organic products of the organism and among the dissipated organic products it develops.

It is this grip that toxins get on the

accumulated products of the system which makes it impossible for the system to eliminate the net work of membranous structure as in diphtheritic throat. This mesh-work is pseudo-membrane simulating the normal membrane in reality, it is toxic neoplastic formation, the formation taking place out of the dissipated organic products.

The medical record of New York, says, "To the unprejudiced mind the more histological demonstration of micro-organisms in tissue is small proof of the etiology or etiological relation there to.

Recent advances in biology forces upon us this conclusion. It is safe to say that if this is true in cancer it is only logical in all other forms of malignant diseases. This being the case the diseases of leprosy loses much of its horror and puts it along side of severe chronic disorders, not as a specific but rather a manifestation of disordered and deranged constitution. (5) That the organism has power of preserving itself from intoxication and within the vital limits of the organism or power of producing anti-bodies to antidote poisons. This is best illustrated in connection with thyroid gland field because the physicians of modern physiology and clinical medicine have demonstrated that the internal secretions represent the true type of anti-body.

The typical cretin in the semi-animal appearances is a body with stunted growth, semi-imbecile mentality, this represents a true case of intoxication up to the point of systemic or constitutional myxoedema. The toxication has viciated all organs of the body so that tissues are deformed and functional processes are defective.

The thyroid glands and appendages (parathyroids) have special metabolic value because like other glands they secrete their products into the blood, that propound and regulates all nutritive changes of the body. The thyroid glands from their physiological standpoint seem to stand at the head of physiological changes of secreting glands including, (a) the thyroids and

para-thyroids. (b) pineal glands, (c) super-renal glands, these glands operate in close relationship to one another, so close that they are dependant upon one another.

Here we note several points, (1) Combined products of the thyroids and para-thyroids, when these products pass out into the blood and then into the tissues act on the tissue cells, accumulated waste in these cells and upon toxins and germs in the inter-cellular field. These products act in such a way as to render these various fields freely oxydysible, mainly by operating upon the phosphorus found in these fields whether free or in combination. (2) This secretion specified under No.1, seems to operate upon and especially sensitise the pituitary body which, Sajous, says "Is the governing center of the control of the supra-renal secretion. Thus by means of thyroid secretion we are able to govern through pituitary body the adrenal secretion. (3) Under this controlling influence from the governing center the supra-renal secretion is elaborated, thrown out into the blood and thus finds its special field of sensitization in the lungs thus controlling oxydation process. The amount of adrenal secretion determining the amount of oxygen that is oxyhemaglobinised. (4) This oxyhemaglobin representing oxygen, (b) adrenal products. Hemaglobin becomes basis of oxydation processes and the adrenal products acting as stimulus to oxydation. Thus the adrenal product maintains; - (1), heat and energy (2) oxydation processes of metabolism, (3) preparation of nutrition for the assimilation process under the control of the nervous system. (4) the blood function of destruction and detoxication and de-phagocytosis by which the blood frees itself from wastes, poisons, and germs and automatically produces immunity or protects itself from death.

By this cycle of activity and protection in the thyroid, pituitary, and adrenal fields there is elaborated a substance or substances which can be used by the nervous system as the ultimate controller in all of the processes of the body including protection from intoxication.

The nervous system uses these substances,
 (a) In stimulating oxygenation, (b) In connection with and increasing oxydation, (c) In promoting bacterial destruction and anti-toxic action. (d) In establishing vibratile process as a physiological expediant to increase physical combustion and thus destroy the wastes that have accumulated and are accumulating in the body. (e) In establishing the general vaso-dilation to counteract the dominating vaso-contraction which maintains the body or blood vessels and blood in the normal tonic and iso-tonic state.

The thyroid gland according to this operates in the organism as a part of a chain of glands, being itself the head.

- (1) To sensitize the phosphorus of the cells and tissues.
- (2) To sensitize the phosphorus of the waste and poisons of the system, blood and tissues, provided these wastes and poisons are in combination organically. Here we differentiate the crude chemical substance and organic equivalent. The antidote of the crude chemical substance requires the chemical antidote of toxicology.
- (3) To sensitize the phosphorus of the germs with the object of creating and opsonin that will stimulate phagocytosis.
- (4) To carry sufficient oxygen in the thyro-adrenal product to the sensitized fields, (1-2-3,) to stimulate combustion.
- (5) Phosphorus being the basic combining element in the nerve tissue, this means a specific stimulus to the nerve cells, greater force in the nerve fiber field and consequently more selective activity of the bioplasm for the supply of oxygen and distinctive trophic processes. These trophic processes are all of the reconstructive order and implies the use of the various secretions in the thorough elaboration and renewal of the cerebro-spinal secretion which is the great trophic secretion of the body.

This places the ultimate process of nutrition, anti-toxic action, trophicity and elimination in the

field of the nerve cells.

The nerve cells thus;- (1) Produces phosphoric oxydation all over the body. (2) Stimulate to greater activity all the functional processes of the body. (3) Arouse into action those active secretions which are of of the greatest value to the body, as the pancreas, liver, secretions of the lymph glands and cerebro-spinal fluid, all of which are engaged in destroying waste, poisons and germs.

By the action of the nerve cells in these fields, trophicity is increased including metabolism, nutrition, anti-toxic phagocytosis, and oxydation. Main point as nervous system is clearing house, for these active processes and all and all active processes unite to protect the body and raise the standard of the resisting power and establish elimination.

Among these processes established through this clearing house, we note;-

- (1) Increased oxydation via the temperature apparatus. One of the clearest of clinic facts in the antidotal processes is increased temperature.
- (2) Increased metabolism, this follows necessarily the increased oxydation.
- (3) Increased digestive action, stimulated by the demand for food.
- (4) Increased assimilation, especially in the nervous system because of the affinity of the nervous system for phosphorus compounds.
- (5) General increase of functional activity, this is reaction from previous changes. Increase of strength and growth and clearing of obstructive and accumulation products.
- (6) This explains emaciation of malignant anti-toxications and obesity of benign intoxications.

When the thyroid-pineal-adrenal chain becomes excessively active in the attempt to setoxinate malignancy it is unsuccessful because the toxicity is too great. The composition of all phosphorus compounds becomes exaggerated and there is tissue waste. The fat and adipose tissue being broken down. In the obest

condition on the other hand phosphorus combustion is restricted to the minimum and fat accumulation takes place because of the inefficiency of thyroid-pineal-adrenal chain.

Sajous, claims that in the production of immunity through the thyroid-pineal-adrenal chain it is necessary to supply certain foreign elements as, (1) Iron, (Fe), to furnish hematin elements of the oxyhemoglobin. (2) Strychnine to increase blood pressure to force tissue nutrition. (3) Other drug substances as may be necessary in particular cases along with, (4) the thyroid extract from the sheep.

This line of treatment may be serviceable for profuse myxoedema, the profuse extract would represent a proximate principle, the other three would be eliminated as foreign elements. However in typical toxicosis when secretory chain is complete, Dr. J.M.L.'s principle is to allow secretory glands of the organism to do the work themselves, aiding them in the anti-toxic field when and only when the toxic substances at the basis of the toxicosis represents foreign poison.

In this field we deal with;-

(1) Toxicosis proper. This toxicosis has developed because of the defective action in the secretory chain with defective resultant, oxydation, permitting accumulation in the blood, cells and tissues of wastes, poisons and germs.

A good illustration of this accumulation of poisons are found in rheumatism, gout, urin, acid diseases, tetanus, etc. In these cases accumulation took and takes place because of the inability of the blood to eliminate on account of the failure of the thyroid-pineal-adrenal function. To over come this condition when the toxins are of the autogeneous type it is sufficient to restore the activity of the secretory organs for destroying waste and eliminating from the blood by free circulation.

(2) In many cases when condition becomes chronic there is prevertion of nutrition, here oxygenation, oxydation, metabolism and nutrition are all defficient. Typical of this condition are the anemias. Exaggerations of this are found in the so-called incureable diseases of the nervous order.

(3) In some cases there is not only visciated nutrition

but the repair processes are impaired and power is lost. Rickets of the pernicious type furnishes the best illustration of this. Here necrobiotic processes are established so that bone development becomes impossible. Bone structure seems so loose in this case that there is no tonic power in the tissues.

In malignant diseases there is a similar condition. Here the protective and immunizing power of the blood is weakened and lost, the blood is deficient in this protection which the secretory chain furnishes as a destroyer or preventer of morbid metabolism. In this condition there is excessive activity, of the thyroid-pineal-adrenal combination. With the result;- (1) That when there is inability to destroy the toxic production, (2) The tissues of the body are dissociated. (3) Nutrition becomes deficient and the repair processes all inhibited, reconstruction becomes difficult and impossible. (4) The body is ultimately converted into a toxin producer and the weakest portion of the body becomes the dumping ground for these toxic products of sub-metabolism.

(4) The subject of toxicology suggests the idea that we must assist the patient instead of destroying the germ. Bacteriology as a dominant science has emphasized the idea of destroying the germ and placing medicine in the first rank. This has a foreign substance that assists patient in the fight against germs. This is alright in its own place but it is not to be applied to humanity.

To immunize patient and remove him or her from toxic invasion is the object of therapeutics.

Toxicosis from the treatment side seems to be;- (a) Increased anti-toxic power of the blood and secretions that give rise to this anti-toxic power. Foreign medicines for the destruction of germs is all right for out side of the body. Pure food is good to keep out poisons but when poisons are there, (b) phagocytosis is the only germicidal process and this depends upon the opsonin of the germs produced by the secretory processes.

This brings inside the field of toxicosis all infectious and contagious diseases.

Tuberculosis represents a toxic condition the tubercule representing the morbidic metabolism or product which is due to the toxin in the system. It is also true of tonsillitis, the enlarged tonsil simply representing rheumatic tumefaction. It is true of leprosy which represents localized disintegration as a result of systemic toxemia.

3-25-1909.

In regard to the original idea of force we must go back to the time of Leucretious and the early exponents of the Leucretian doctrine to get the principle of force lying back of all material or matter. According to that doctrine matter is the expression of force very much, as the Osteopathic idea of structure and structural relations is the expression of vitality.

In more modern times the origin of this principle is tracable to the time of Paracelsus. In speaking of mineral waters, Paracelsus says, "Where many minerals are lying and there is chalk and a hidden water course which tends to come to light of day, the water would have to run through such regions. In doing so it must unite with their mineral use and must receive the heat and life forces and nature of the same. Therefore when it comes to light of day, it keeps its heat and life forces which it has received internally.

According to this, Paracelsus conceives of the idea of a dynamization of substances by the principle of fusion of water running under ground, over rock beds, and through substances there by taking on the forces of the substances. His principle is negatively not the presence of the substances in the water but the action of the forces of the substances through the water.

In regard to the subject of immunity, the fundamental basis on which dynamization toxicologically is based, is that of immunity in contrast with protection. If vaccination or any other crude method is of value it is of value from standpoint of protection supposed to be imparted to the system by the tissue ingestion of a crude substance, result of which is a certain protective reaction in the tissues which make these tissues nonsusceptable to certain poisons or poisonous influences.

The doctrine of protection has been demonstrated to be false at least in so far as it bears on the continued protection of the organism. If protection is established at all it is established for time being only, hence we are left the principle of immunity as basis for this natural immunity.

A demonstration of this theory of immunity has been made by experimental work among the Germans. Sticker one of the great German investigators, in the transplantable tumors has demonstrated, that there is a general nature immunity of any certain organism to tumors. This demonstration has been followed up by other investigators who have furnished isolated facts.

The demonstration may be said to rest on the following;- (1) Tumors that arise spontaneously in animals can never be transplantable to animals of another species.

(2) Only a small portion of the tumors from any animal can be transplantable to animals of the same species.

(3) According to experiments of a German, human tumors can never be transplanted in to the anthropoid ape.

(4) Stickler has attempted to transplant human tumors to all domestic animals and in a series of 400 experiments has not been successful.

(5) Particular strains of animals seem to successfully resist the transplantation of different tumors of the same animal, e.g., carcinoma of the Berlin mouse cannot be transplanted into the Norwegian mouse and visa-versa.

(6) Artificial immunity has been produced by injection of tumor cells into the venous system. In cases of spontaneous recovery from tumor inoculation the animal is found to be immune to later inoculations provided the inoculation has taken place on the venous side. The explanation of this fact is undoubtedly to be traced to what we may call nutritive immunity, that is all the nutritive materials suitable for the development of a particular organic condition may be exhausted and when they are exhausted nutritive immunity is established in that organism so far at least as a particular organic toxication is concerned.

This will bring down the subject of immunity to the plane of bioplasm nutrition and will

place the doctrine of immunity where it has been placed by Erlic, in the composition and constitution of the cell.

In the field of causation of tumors, therefore there are two things; - (a) historical developments of the particular life, as lesions that have existed or may have existed during the previous life of the individual. These lesions include tissue lesions, microscopic lesions among the cells, food lesions, in the field of auto-intoxication. In other words in carcinoma tuberculosis, or any toxic diseases, the nutritive condition of the organism at the time when the particular diseases, so called, takes hold of the organism is net resultant of the historical nutritive development of the patient during the past period of his life. (b) the lesion of actual toxic nature arising from impurities in the food. Actual poison in the food, toxic substances taken as medicine or absorbed from any source as, wall paper, gas, etc., or toxins in the system from the noséde action from infectious and contagious disease toxins.

All these may operate in the field of causation as predisposing or exciting, or both, causes, when these poisons are in the system as bioplasmic constituents, in the cell and tissue fields or inter-tissual fluids, versus alimentary canal field. These poisons accumulate unless they are volitile. With every metabolic change of nutrition there is an up building in the system.

There is a reconstruction of all materials taken into the body, toxic or not, on the toxic basis. These poisons are other auto-toxins produced by the system itself or the hetero-toxins produced by the organic combination with foreign poisons. By the latter we mean toxins foreign in constitution and construction to the proximate principles of the body.

When these poisons are in the field of the body pure and simple they can be eliminated by stirring up the secretory processes of the body. These processes can be assisted by such agents

as baths, sweating, treatment, etc. In case of hetero-toxins, they accumulate in the system and become a part of composition and structural constitution of the cell and cannot be liberated from the cell and tissues unless antidoted on the bioplasmic plane.

These hetero-toxins may be accumulated in the system in two forms. (a) In substance form in this case actual poison itself accumulates as in cases of crystals of the poisons which are deposited in the tissues around the joints. (b) In force form, where the substance is taken up into the cell substance, that is when it passes into the bioplasmic field there is no poison substance present but the fluid matter of the cells gives toxic reaction in the bioplasmic plane. These are dynamic poisons and represents passive poisoning, that is it represents affinity condition, that is an accumulation has substance force.

What we mean by anti-doting, is the getting rid of these two forms of poison so as to clear the system of obstructive toxic condition which keeps the organism from being normal. First form of poison, substance form, can be eliminated by stirring up the circulation and establishing elimination, which means, removal of obstructions, correction of lesions, etc. Second form of poison, force form, cannot be eliminated with out its corresponding antidote, reason for this is that it represents passive poisoning that has visciated the cells of the body and tends from time to time to visciate every sub-katabolic process that takes place in the body.

This idea of antidote is the physiological basis of such anti-bodies as anti-diphtheritic serum used at the present day. In that case however the anti-body is converted not in a negative media but through a positive media or a positive media having all the characteristics of the animal organism from which the media was derived.

In the case if the force anti-toxin the anti-toxin is triturated or attenuated through a media that is negative.

In anti-diphtheritic serum trituration or attenuation takes place through a foreign serum media and developing force processes goes on to an indefinite decimal point in fluid media.

Physiological objection to this is that the method of using foreign serum media is un-physiological. The serum of a horse or any animal representing serum of organisms to which the human organism is sometimes fatally susceptible and is always susceptible on a foreign basis.

Dr. J. M. L's principle is to convert the antibodies into a force and attenuate the force through an inert media like distilled water or alcohol when that is necessary in preservation, and use that as an antidote instead of using serum anti-toxin.

In this we are using the method of Paracelsus or the so called Homeopathic method of attenuation but not the principle. This is not the principle of like cures like, but it is the principle of some substance in attenuation or trituration, that is in force form, meeting or coming in contact with and not overcoming the disease, the drug being used in the crude form, whether this crude form was that of single substance or a combination of substance. This is physical and physiological toxicology.

This principle is suggested in the physiological field, or experimentation by the fact that in case of certain secretions have found toxic substances that reacted on the bioplasmic plane but gave no reaction on the crude plane. One point that must be taken into account is, that any antidotal treatment of combined prescription cannot take place by the anti-doting with a specific ingredient separately that made up the prescription but only antidoting with the combined prescription. The same principle of detoxination and antidotal action is found in the field of the internal secretions where certain organs have power of taking up toxic and waste substances and produces an elaborating process of the secretion and anti-body or bodies that are serviceable to the body as auto-toxins.

This antidotal function of the thyroid adrenal, and pineal glands has a nutritive basis or up building process in the field of assimilation.

Some writers have said, that the system

takes care of itself. We have found that normal oxygenation, normal assimilation are impossible, unless this constructive secretory process is taking place on a normal basis.

The cycle of nutrition in the body represents bridging or destructive and constructive processes, that is, both destructive and constructive processes are essential for the life of the organism. It is unphysiological to speak of taking in a certain amount of food and changing that food to another form and adding on the tissues of the body. Nutritive processes are not so simple. Metabolic activity of certain organs maintains always closed doors against the reception of all poisons to a certain point. If organism has been intoxicated beyond this normal resisting power, if organic life has to be preserved it is essential to aid this power of resistance.

When toxic conditions become over whelming that organic life is in danger and antidote may save by removing the obstruction that keeps the organism from returning to normal. If pus is present, surgery says, "get it out", if prussic acid is present chemical physiology says "get it out".

If protein supply of the cells and tissues become visciated by the presence of tox-albumins and if successive cycles become changed by the tox-albumins degeneration will occur. Toxicology suggests that separation of the toxins from the albumins is essential to save the albumins and in order to allow normal nutrition to replace prevented nutrition.

In this way the anti-toxin or antidotal treatment is the field of removal or correction of toxic lesions. It is this field which suggests that biological conditions of the organism should be given chances to assert themselves in the organic processes of regeneration by removing those conditions that influence, affect, or determine the regenerative processes in a detrimental manner. In doing this we are not introducing any foreign substances into the body, but the object is to separate from the cells and tissues what is foreign to bioplasm and cause its elimination from the system.

4-1-1909.

Strong confirmation of this principle is found in the bacterinins, or in the so-called bacterial vaccines which represents, according to physiological pathology, the sterile suspension of dead bacteria in normal saline solutions. Antiseptic means are used also to protect this bacterial solution from deteriorating organisms. Efforts have been made to standardize this preparation by placing a certain number of the bacteria in each cubic centimeter of the solution.

According to Mechnikoff, the resisting power of the organism depends on the phagocytic action in the organism. According to this principle, only something that will stimulate phagocytic action or the phagocytes can intensify or aid the resisting power of the organism.

According to Wright, the opsonins are those substances which prepare bacteria for food in the leucocytic process. By the use of sterile bacterins the opsonins can be multiplied with a resultant increase proportionally with in the resisting power of the organism. This inoculation of the saline bacteria, some claim to give the organism protection from infection from bacteria, their object is to protect against invasion.

According to this physiological bacteriology lays down certain propositions;-(1) protective capacity of the organism against living germs is increased by the injection of dead germs or presence of these dead germs with in the organism. (2) This represents active protection in contrast with protection produced by the commonly prepared diphtheric anti-toxin. (3) In the passive protection there is the preformation of the anti-substances through the medium of another animal. These preformed substances of another animal body are re injected into the human body as a supplied protective substance. (4) This principle is in line with the active immunity established by the antidotal action of the force equivalents of the anti-toxins of any other substance or life to stimulate the functioning of the organism.

The difference is according to Wright,

physiological preparations are supposed to be prepared through the medium of another animal or organism and then injected into the organism that is infected or affected by germs or toxins.

According to Dr. J. H. L. the protection is established through the vital and physical conditions of the organism, this condition stimulating physiological processes, or changes in the physiological processes that take place with in the body with out depending on;-(a) any other medium, (b) with out the assistance of any physiological process peculiar to any other organism than the organism in which protection is established.

This protection represents a functioning that belongs to certain gland structures and ultimately has associated with all the cells of the organism. (5) The toxic condition represents toxic production from cell side and its accumulation in the system, some where locally by a walling off process, as in the tubercule or abcess formation, etc.

This general principle has received strong confirmation in the field of modern experimentation.

Drs. Mechans and Coles have been using for some years both stock and autogenous vaccines with succesful results. In the Massachusetts General Hospital about 100 cases have been treated in the last year by Drs. Hartwell and Lee in connection with the use of stock staphylococccic vaccine. These experimental demonstrations are proof of the fact that toxin elements under lying toxic diseases have specific action upon and specific action with the field of the body.

The basis of this action and reaction is to be found in connection with the biological proposition that germs of a particular variety belong to a particular grade of life and are to be classified in that field of biological life in connection with the causation of diseases.

Physiology of this subject requires to receive full demonstration. Basis of this physiology may be summarized;- (1) In the blood we find what

have been called agglutinins, these operate on the invading germs.

(2) Certain bacteriolysins are also found in the blood these dissociate the bacteria and cause their disintegration. (3) Certain bacteriocites are also found in the blood, these tend to kill the germs. (4) Certain opsonins are found in the blood which tends to become food of certain types for the germs and thus through the food field prepare the germs for leucocytosis.

According to this last proposition or the physiology of the body, when the body is provided with proper food determines the preparation of a certain type of nutrition which is food for the germs found only within the body. That food being prepared by the body with the purpose so the germ can be destroyed by the leucocytic process. These four types of substances are present in the blood and their presence can be demonstrated by blood tests and examinations.

Acquired immunity in the case of the body organism depends upon the development of these substances within the blood field. This is the reason why physiologists have made this statement, that opsonin power of the blood represents its capacity for resisting the action of the germs.

When pathogenic germs or toxins enter into the organism the entrance of the germs stimulates formation of the opsonins and these opsonins represent food field through which the organism via its leucocytes prepares other anti-bodies, anti-toxins, or antidotes. Immunity then is not a condition of the body as a standard state of the body, but immunity represents a process that seems to be continually progressing.

This process of immunity development has certain stages well marked. (1) At the beginning the organism has the capacity of preparing opsonins or opsonins substances (2) These opsonins or substances have an affinity for the germs. The germs will take and ingest them. (3) Following this there is definite

phagocytosis, that is the leucocytic functioning is stimulated to its maximum. The maximum of leucocytosis means germ destruction. (4) Following this there is marked increase in the anti-bodies or anti-toxins found in the blood. This increase corresponds with the general improvement of the patient, this indicates, (5) with the development of the anti-bodies there is increased recuperative condition.

Remember here that opsonic formation, phagocytosis, and recuperation are physiological processes, none of them representing a state of condition of the organism but all of them represent the continuous process of self protection, preservation, and immunity. For this reason the value of recuperation is to be gaged by the so called opsonic index, with in certain limits. The symptomatic condition of the patient being the best guide.

One important point demonstrated by the vaccine theory, contrary to themselves, is that there is a specific value of the bacterial vaccine only in cases of infection that corresponds to the organism. The meaning of this is, that vaccine therapy depends upon the identity of the bacterial form and its toxin. Unless we have positive means of indentifying the bacteria and its toxins and the one that produces the toxin the method is practically valueless.

Drs. Lathrum, Spitta, and Inlan, make the following the following statement;- "Many persons owe their own immunity to tuberculosis and other diseases to the fact that living bacteria with in their bodies are being absorbed in the alimentary canal and killed, thus stimulating the production of anti-bodies" They add to this, "It seems a reasonable assumption that the administration of killed tuberculosis bacteria or their toxins by the mouth would enable the body to be immunised to an attack of bacteria.

Copman has shown that vaccine crusts when given by the mouth of the patient vaccinated against Small-pox have produced vaccina. In all probability the vaccine can be absorbed by the stomach if the stomach is empty and with some substance that will aid absorption.

Drs. Calimette, Guerin, and Breton published a paper showing that administration of specially prepared elusion of dead bacteria by the mouth gave immunity to the guinea pig if given with the food.

According to this the physiology of the preparation of these bacterins consists in the development of the bacteria by culture, growing the bacteria on artificial culture media, suspend the growth in sterile salt solution, and sterilize that at 65 degrees C, and standardize the number of bacteria per c.c and preparing in sterile vials.

Here we have established by the physiological bacteriologists themselves the principle of immunity with its basic foundation with in the blood field of the individual. We must remember that organic development with in the organic field represents not the state of the organism or part of the organism but the living processes with cyclical movements. (a) The weakening of the organism makes it susceptible to the formation with in its mal-nutrition field of living and organic life forms of a lower and lesser order. These lower or lesser life forms begin to prey upon the organic substances of the organism, living upon the organism and destroying the nutritive substances of the organism.

In this we can state the lower organisms multiply locally or generally and with this multiplication there occur in the organism a local or general awakening of the resisting powers of the organism. This results in a struggle for existence between higher organic and lower organic life forces. These lower life forces have become the enemy of the organic life.

This struggle for existence represents the incubation and developmental phases of the so called infectious and contagious diseases. The life force of the organism is the main force that operates with the organism. One of the chief fields is the field of protection and immunity, any protection or immunity enters in the actual substance of the organism or constituent cells because death process and death

itself represents dissociation and if death takes place the result is disintegration.

The establishment of vital integrity with in the organism means the establishment of the control of the vitilizing force, that force having the power to establish association versus dissociation between different molecules we find with in the body or organism. This force which has the power of creating or binding to-gether forces of the organism is the fundamental force of life.

It is on this principle that we attempt to establish the life force of the organism and the life force that is antagonistic to those substances of foreign nature that have been taken into the system. On this principle we attempt to convert the toxic substance into its force equivilent and thus assist the vital force of the organism in throwing out foreign substances and elements.

4-8-1909.

TUMORS.

The subject of tumors is generally discussed under the head of cancer, largely because cancer includes every type of malignant diseases, according to the common conception of the term. In the pathological sense cancer includes only the ultimate form of malignant tumor. We take the term cancer in the full sense because the malignant type is the typical type.

By this we mean every malignant tumor was once benign but it has passed through the stages of the benign tumor. Every malignant tumor is toxic but every benign tumor is not necessarily so. General opinion among the profession in regard to cancer is that it is an incurable disease. The most that can be claimed by surgery is in the palliative field.

Dr. J. M.L. says cancer is not an incurable disease any more than any other disease.

First question then is, Is cancer cureable?

Answer to this depends on the following, Is the cause of the cancer or tumor removable, if so the disease is cureable, but if not it is in-cureable. Disease is an effect produced in the organic system, (anti-histological) and anti-physiological), appearing first as a condition or state in the system not as a part of the system.

Cure of disease then implies the removal of the cause and effect and the ability of system to stand first the removal and then the recuperation of the organism. Applying this principle to the field of tumors, if we can locate causation and remove the cause, if sufficient vitality remains so that the organism can build up the system on this vitality then the malignant disease is cureable. This means that the general nutritive condition must be built up.

(1) Provide the system for and establish thorough trophic condition through out the entire organism.

Next question is, are drugs of any value in the treatment of these conditions. Dr. J. M. L. idea is that they are not. One of the main points in the treatment of malignant diseases is the elimination from the system of every thing that is foreign or has accumulated in the system from the previous life of the patient. In other words to get the system rid of all poisons, active and passive. This is the foundation of treatment. This applies not only to drug substances but to irritants of every kind; - tea, coffee, pork, tomatoes, etc. These all should be eliminated from the diet. Tomatoes are the most detrimental to the system than any other substance there is. Most every patient having a malignant disease has a craving for tomatoes but every person having a craving for them has not necessarily a malignant disease.

There are a number of points to be noted here in connection with these malignant conditions.

(1) Always structural disturbance of tissue present, that is the irritation we find in the system is based on some structural perversion. Rib lesions in a chest condition, or some other mal-adjustment of the structures

This structural perversion is the exciting anatomical cause of the localized perversion.

(2) Localized mal-adjustment is the exciting cause of localized toxicology. This results, in (a) toxic accumulations, (b) artificial toxic nutrition, (c) organized perversion of tissue and tissue development. Result of this is every tissue of the body in a malignant disease is perverted and every tissue and organ is in a state of perversion.

Causes of this condition in some particular point is as follows;- (a) some mal-adjustment that weakens a certain part so that it becomes the dumping ground for the refuse of the body. (b) traumatism associated with direct injury. Surgery injury with the benign tumor causes localization of the toxic elements of the system, same thing is true in laceration in the utero-vaginal field, cancer in the stomach field, etc. (c) abuse of certain organs or parts of the body. The functional activity becomes over active causing reaction on the nervous system, separates structures from the nerve supply and consequent result is death of the tissue so far as organic vitality is concerned.

(3) There is no field of diseases in which we find so many lesions as in the field of malignant diseases. This is accounted for probably by a number of conditions, (a) The fact that certain lesions may be primarily in the etiological field. (b) The fact that lesions may be secondary in the etiological field, (c) The fact that some types of the lesions are reactions from changes that are produced by traumatism, laceration, etc., over activity of toxic condition, all these tending in one direction of malignant growth. (c) Frequently we find compensatory lesions. This compensatory lesion field in malignant diseases is based on the fact that the system is normally self sufficient and with in the organism the vital resisting power will try to throw off malignancy and restore the organism to normal.

Probably most of the lesions in malignant diseases are of this type because during the development of the malignant disease there is a

real struggle for existence between organic life and the toxic elements which is to result in new life processes which will be a gradual death of the patient. In this case the entire force of the organism is used by the organism in the attempt to overbear the effects of the primary lesions. (d) As in a majority of the malignant diseases the organism is weakened. We have history of a series of weakening causes, one after another affecting the organism in a way to lessen its power of resisting disease.

At any stage that we get malignant diseases we have in the patient the net result as far as the efforts are concerned, lesions of a life time, all of which tending in the direction of weakening the organism of the patient. This accounts for, to a large extent, the attempt of the system to antidote the poisons that are found within the system. It is only when this attempted antidotal treatment is unsuccessful that the patient dies of some type of toxemia.

(4) There are always in the malignant diseases toxic conditions in some localized area. This toxic condition represents perverted metabolism of the entire organism together with the accumulation of toxic biproducts of the system. If blood stream is poisoned or the nutritive and trophic supplies are visciated and the subcatabolic process of the system is impaired there is a throwing out of the system, products, these are products of the body assimilation. In this process the poisonous accumulation is found in certain parts of the system, e.g., this toxic accumulation has been demonstrated in many ways, In the dissection of some cadavers of a siphilitic patient in which the tibial nodes have been found we have been able to find Mercury, (Hg), crystals along the tibial bone between the bone and the periostium. Meaning of this is these tibial nodes are really malignant tumors, that are constantly fed by (Hg), Mercury crystals that are deposited along the line of the circulation.

Treatment side of this implies that the removal, liberation, or the breaking up of the combinations of these crystals with the tissue would result in the removal of the tibial nodes.

In other words visciated growth or visciation being toxic is the cause of every form of neoplastic whether so called, tumor, node or tubercle. Visciated growth is not a disease but it represents an attempted excretion from the centers of vitality. When the growth has reached certain types new growth becomes organized. At this stage neoplasm develops positively in the process of life construction and negatively in life destruction. The life destroyed is organic life and the newly constructed life is developed by drawing away from the body the nutritive and destructive processes which consists of visciation of nutrition through out the entire organism. (5) All of the systems that are said to be patho-pneumonic of the malignant diseases are symptoms of intoxication. The cachexia represented by the dirty yellow dis-coloration over the skin, the blood spots, the general wasting away, failure to assimilate and consequently visciation, loss of appetite, gas formation, etc. all these symptoms are symptoms that represent the continued attempt at the excretory functions. There is a throwing out on the skin or into the eliminative field of the glands, the glands, blood, and weaker tissues.

These processes render nutrition impossible and continued organic life impossible.

If the patient is to recover or given the chance to recover this toxication must be stopped, that is the line of treatment that must be followed in toxicology cases is a symptomatic line of treatment. Eliminating one by one the toxic symptoms that are developing in the patient, that is the only way to control toxic symptomatology and help patient. Restore all eliminative processes as neraly as possible, circulatory condition must be looked after and raised to par, vasomotor control established, and the nervous system regenerated before the skin and surface tissue can be dealt with. The internal system is to be purified and if this is accomplished the internal will purify the external.

In the purification process the blood is to be cleansed and the normal balance established between

lymph, blood and cerebro-spinal fluid.

The two main types of tissue that represent malignant or toxic development are epithelium and glandular structures. The reason for this is, these represent to a large extent, the eliminative fields for the stronger tissues of the body to restore these to normal, especially, epithelium and glandular elimination must be restored. This restoration must take place through the nervous system.

(6) One point to be noted particularly in the development of the malignant growths is the unbalanced between nerve fluid, blood and lymph. That is the fluids of the body we find in malignant diseases a tendency to return to the embryonal condition of life, in which the blood becomes the lesser field and the lymph the greater fluid.

In the examination of the blood of those patients who have had malignant diseases we have found, with no exception, a very marked leucocythemia with no disturbance or very little of the red blood corpuscles. In the latter history of the cases we find modification of the red cells with a tendency to the development of the giant nucleated red blood cells. That is instead of the mature red cells we have persistence of the embryonal red cells.

On the destructive side of the blood we find marked tendency to the presence of the plaque or plates. One peculiarity of this is of importance that this is the plates always respond to an acid reaction only. This indicates a gradual degenerative change in the fluids as visciation progresses downward from the normal alkalinity of the blood to normal activity of the lymph.

What is cancer? Next to tuberculosis comes cancer from the side of the causation of death.

In Chicago, e.g., cancer has shown an increased mortality in the last 50 years, changing from 11% to 5%. According to statistics the total majority from cancer has more than doubled, and it is since the development of the so-called grippe. Reason for this is, grippe has an effect to lower the vitality and produce systemic weakening. This weakening corresponding

with senility as far as the organism is concerned. According to this lowered vitality and resistance in the nerve cell field makes it impossible to keep up systemic nutrition and keep organism at its normal standard of resistance.

Aside from this the chief causative factor, (internal), is indoor life, (1) this produces lower vitality from the lack of proper amount of oxygen, renders the system more susceptible to infection through imperfect oxydation, imperfect food formation and the accumulation of waste in the organism.

(2) The cell chemical poisoning associated with the accumulation action of carboic acid and other poisons and causes in the system.

(3) Continued irritation produced by toxins that are eliminated from the system, on account of lack of proper excretory action. This means that the most of the time is spent indoors with oxygen supply insufficient to carry on the vital processes necessary in normal health. To this must be added lack of proper water supply for the kidneys and excretory organs to carry away waste. Hard water, with an excess of lime, lack of physical exercise to impare respiration and perspiration. The accumulation of acid in the system reacts on the skin and sub-cutaneous tissues.

Necessity for oxydation is demonstrated in the field of physiology. Animal oxydation depends on the special constitution of the protoplasmic proteids. The oxydation in the ultimate analysis depending on the neuclic matter of the cell.

This has an important bearing on the fact we noted before, namely, the predominance of the blood plates. These blood plates representing neucleo-proteids of the cell metabolism.

Braithwaith, attributes cancer to four fundamental conditions. Most important of the four are;-(1) Excessive use of inorganic salt, this condition however according to him operates only when one or more of the other conditions exist. Excessive nutrition following use of too much food.

(2) Impurity of the blood from the lack of exercise especially in people who eat too much and exercise too little to work it off. (3) Local irritation that has affinity for some special type of structure, nicotine from tobacco smoke, micro-organic burrowing, affection of the uterus, that is ovaritis is the starting point of mamary gland cancer.

Drs. Braithwaith and Turnstall, physicians for incurable Jews found that in Jewish women cancer is unknown. The hog is the only animal that is not subject to cancer. This is explained by these writers on the basis that the hog and wild deer which get no artificial salt supply are free from cancer. That there is a limit to this is demonstrated by the fact that the deer will get salt even if it should die in the attempt to secure it. While in the domesticated condition the deer uses salt freely and developes cancer.

Dr. Braithwaith's strongest demonstration lies here, most extensive cancer fields in the world is those who use salt pork. In line with this we find the theory formulated that salt used with in the limit of the eliminative power of the organism is the best preventative of cancer. The doctor has demonstrated two points (1) That there is a relation between the excessive use of meats (salted) and cancer. The excessive use of meats in sedintary people and any kind of food which the system does not call for is the foundation for cancer development. Both these facts are in line with the theory of toxic exciting conditions.

Dr. Saleeve, experimenter in the field of life, discussed the cure of cancer by the use of tryppson, said to be discovered by Beard.

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Dr. Saleeve says, "It seems more than probable that trypson is poison for the cancer cell and is not poison for every other cell. Only a few of the un-philosophical minds could have thought that Beard's reasearches would enable him to place in the hands of physicians a cure for cancer.

Drs. Beard and Mekenze have concluded as result of experiments that tryson is the drug to destroy cancer cell without danger to others. This is a form of pancreatic juice.

The organism indicates after injection of the trypson every one of the cells is degenerated. On this basis they conclude that cancer is a product of a germ. These germ cells are not produced by the germs but are of embryonal growth. Germs cells do not confine themselves to one organ but wander from the body. These wandering cells originate in the bioplasm. The matter represents oxydized matter forming good living proteids. These living proteids are food in every developing cell and are essential for life and growth. The white blood cells take up this primary substance and hand it over to the blood to furnish the tissue cells with direct vitilized nutritive substance. In normal tissue this substance increases cell life to so antagoneise disease condition, it builds up cells, removes exhaustion, and regulates rhythmic action of the muscles.

When these primary substances degenerate certain of the white blood cells degenerate and this results in the développement of the migratory cells in the circulation. These cells may lodge anywhere and grow. According to this we have theory of the development of cancer cells, capable of both transplantation and migration. These cells are not the embryonal cells but are the primary corpuscles of the repair processes of the body. These cells practically perpetuate the embryonal processes.

In infectious diseases the same thing is true of the origin of the germs, that is the germ does not originate out side of the body but inside in connection with the degenerated bioplasts. The germs do not come from with out except in proppagation of one body to

another and this is transplantation. Germs come from within and represent degenerated bioplasts, degeneration by destructive process of the primary substance, bioplasms of the neuclier field plus some of the red blood cells caused by the action of the degenerated primary substance.

No one has denied that cancer implies a new growth, hence this new growth. If according to embryology and physiology the pancreatic ferment is a destroyer of new growth. This implies nature has provided a normal secretion for its own protection by preventing developments of the cancer growth.

Question is, what and why do we call cancer, because we must get definition from its field of treatment. Our definition of cancer is that it represents a malignant growth, involving change of the structure of an organ or tissue in the dissociation or separation of the normal histological cell structure, involving as pathology claims, a return to the simple continued, recurring embryonal state of regenerating structure. That is we have in a particular organ or tissue, (1) The process of dissociation, (2) or regeneration, that is a typical generation on the toxic basis. (3) organs of this regenerated visciated substance.

It is to this organized neoplasm that the term cancer is given. (4) Cancer represents however a changed condition of the system or rather of the underlying units of the substance or bioplasm, white blood cells and tissue corpuscles before the localization of the condition takes place. (5) This changed condition of the primary substance involves the failure of the trophic and nutritive condition primarily, implying an abiotrophic condition of exhaustion of the gangliated system or positive poisoning. Thus preventing the proper supply of nervous force and trophic material, that is there is always underlying the localized cancer ganglion-aesthesia, that is a disturbance irritation, anesthesia of the gangliated nervous system. neurosis which is the starting point of secretion and excretion.

(9) Result is that the structural part of the tissue involved grow at the expence of the inter-cellular parts on the analogy of the spider cell growth at the expence of the nerve cells in the brain,Hyperemia, Hypertrophy,proliferation of cells and deposit of materials naturally and necessarily follows in the physiölogical development of the pathological conditions.

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All types of tumors including cancer may be classified as constitutional diseases,that is the condition goes back into the fundamental unites of life,namely;the bioplasm.

The constitution determines then what can be done in the case and a good constitution has a good power of throwing off in the system what is producing the destructive condition. It is not a matter of stimulating physiological processes but a matter of establishing bioplasmic processes,original theory of cancer was that it represented an isolated cell that had migrated from its original field and was implanted in some foreign field. This is physiologically impossible. The attempted isolation results in the formation of a new substance and these substances alter or destroy the constitution of the cell. This process accordingly is very delicate. These new substance may alter the solvent substance of the blood that keeps the waste product in solution, the solvent substances that keep the uric acid in solution becomes a xanthin product and on this accumulation may take place.

As a result of this accumulation the leucocytes become acid, the normal condition of the leucocytes being alkaline,hence abnormal when acid,and this condition tends to leucocytic degeneration. In this condition of acid leucocytic the normal nutrition of the tissue cells is impossible. If we add to this another fact which is found in chronic diseases presence of poisons,eith by auto-intoxication or the active use of

poisons, then we find tumors or cancers represent a chronic constitutional condition in which we find, (1) Abnormal condition of the bioplasm, (2) Abnormal condition of the leucocytes, (3) Poisonous elements in the system and nutritive field.

Dr. Burnett of London, says, large number of cancer cases in London come from the eastern countries of England, where people go to get cured of consumption. It is because of the consumption poisoning is not taken out of the blood. It is lived down and not out of the clear air and when the vitality begins to wain it reappears as cancerous condition.

Here we have recognition of the facts, (1) That cancerous condition is constitutional and may have as its origin a pre-existing tuberculosis. The accumulative poison idea is recognized as a basic facot in cancer.

Dr. Williams of England, describes cancerous growth on mucous membrane that develop in its original field, but later develop in a cancer growth on living parts. Its original field was the mucous membrane, but the mucous membrane lived it out and down from the mucous membrane field and throwed it into the glandular field. In this case the Dr. claims that rheumatism originally lay at the foundation of the cancer growth. The rheumatism represents an obstruction in the form of a poison that nature attempted to make in purifying the tissues and was unable to eliminate from the organism. According to this while pure air may be the means of destroying tuberculosis, pure air may not be sufficient to eliminate poisons from the system, Why? because poisoning is deep-seated in the bioplasm. Tuberculosis is particularly a disease as rheumatism is. In the metabolic or superficial field.

Pure air or open air treatment may be sufficient to eliminate poison from the superficial field, but the problem is not only to eliminate from the superficial field bu to cut out of the deep seated field of the bioplasm.

Cancer is comparitively a modern disease, it is said by some writers to be the result of civilization. The truth of the matter is it is an attempt to

to subject the bioplasm of the body to the same conditions as in metabolism of the body.

The chief characteristics of the cancer development therefore seems to be hyperplastic either of a specific type or no specific type, there being ~~an~~ rapid proliferation of tissues or cells to tissues or cells of a lower order.

Basic foundation of the cohnheim theory is not the embryonic origin of a tumor but the fact of a lesser tissue growth growing in the field of a greater tissue. The lesser and greater representing development. Malignant growth as a growth is purely local, but it is always the result of a constitutional condition, this purely local growth is always benign in character.

Carcinoma originates from cells which belong to the epioblastic or hypeblastic tissue namely the epithelial type, while sarcoma are from mesoblastic connective tissue. What ever ~~an~~ type of cancer we find therefore the cancer is characterized locally by rapid proliferation of cells because cells are of a lower order than normal, illustration, It takes 21 years to make an adult human body and for a complete nervous system 25 years, and it takes only 6 months to 6 years to un-make the body where there is implanted in the organism a cancerous element that will destroy the organism. That is the contrast in degeneration as compared with regeneration is the average of 21 years.

Tumors or cancers therefore may be caused either by germs or toxins, the germ or toxic basis may be present in every one.

Here J.M.L.'s views of cancer may be formulated in the theory which is summarized as follows;-
 (1) There is a nervous condition, representing a trophic nervous disturbance involving most fundamental bioplasm, representing a disturbance in co-ordination between bioplasm and protoplasm, bioplasmic and protoplasm processes. Resulting from this we find conditions
 (2) which affect the lymph system through the accumulation of the visicated trophic material found in the cerebro-spinal fluid and spinal fluid and then in lymph glands.

(3) This in turn affects the blood through the lymph an affect that shows itself primarily in the minute blood crystals in the skin, and in constitution and composition of the blood, especially in the platelets and crystals. (4) The visciated condition of the vitality of the fluid causing localization of the fluids. This localization taking place in connection with traumatism, dissociation of cell structure by laceration, etc.

This localization may take place, (a) by weakening the physiological activity of certain organs or tissue structures, e.g., in cancer of the liver found in this case where liver is dormant. Liver cancer is most prevalent in male sex, (b) by paralysis of the nervous force to the organ or structures in which localization takes place. (c) by poisoning metabolic materials so that the organ directly concerned in metabolic processes becomes centers of waste materials of the body. (5) Neoplasm represents at this stage the accumulation of sub-catabolic substance or the product of systemic sub-catabolism localized at some point where sub-catabolism is at its maximum, on account of traumatism, etc. This sub-catabolism represents catabolic state in which effected cells which have performed their service in the body, remain in static condition in the body as degenerated tissue structure.

The immediate cause of this sub-catabolism are;-(a) a deficiency in the supply of oxygen that is necessary to perfect oxydation. (b) acidity of tissues, this acidity preventing development of tissue element in the normal alkaline medium. (c) deficiency of heat, this is found primarily in old age, where heat units are less than normal, (d) result in the accumulation of useless waste and toxic element which the system is unable to eliminate or metabolism. If system is unable to eliminate or metabolism these then it must make use of them in some way, this means localization of the neoplasm and its association toward with vitalized cells.

This indicates (a) static condition of the organism, (b) static condition of the accumulated waste products, (c) Reaction of these two on each other.

Here we have field of minute microscopic lesions not in the pathological sense but in the physical disturbance of the physical relation of structural elements.

(7) Cause of this neoplastic accumulation however is a constitutional one, namely, deficiency in the supply of oxygen, deficient alkalinity of the tissues, and deficiency in the heat distribution. Net result of this being a sub-catabolic degeneration. Result is a necrotic and necrotic process among the tissues, degeneration changes the blood cells, acidity of the blood, and general intoxication of the fluids of the body, all of these changes are in the nutritive field.

(8) Field of mechanical irritation, obstruction, or interference.

Lesions produced in this way are (a) primary. In lesions which are produced, or for a time, from hyper-functioning will result in any of these conditions already mentioned and will represent a primary lesion. This is the reason why lesions in the nutritive areas of the spine in the malignant diseases, (b) secondary lesions, here we have any lesion that obstructs or interferes with the distribution of oxygen or its supply. (2) the alkaline supply to the body, (3) heat distribution or any lesion that is associated with traumatism abscess, ulceration, etc., These lesions may cause localization or dissociation of the cells or cell structures and toxic accumulation. Essential point is then, there is constitutional nutritive disturbance.

According to this the body in all of its parts as an organism is homogenous. No neoplastic action exists without disturbance of the entire organism because of the homogeneity of the organism. This is the reason why we find in therapy the removal of a growth by the knife or lotion or internal crude drug cannot cure the condition but frequently aggravate it, because metabolic condition results from such mode of treatment. This results in metastasis and systemic sub-catabolism and is therefore a primary pre-existing cause of cancer growth. This means, cancer like tuberculosis, pneumonic infiltration, anemic degeneration, leucocytic stasis, etc, represents an excretory product

of the already diseased condition of the body, or system. Hence degenerative materials, impurities, waste elements remain uneliminated and thus accumulate in a field of dissociated cell structure until degeneration of cells take place and a lower order of cell life is developed.

(9) One important point to be noted is that sub-catabolism may develop by the use or presence of poisons in the system, such as drug remedies.

Dr. Hutchinson tells us that arsenic, (As) may be the cause of cancer.

Dr. Wakefield, in the Amer. Med. Jour. in 1902 writes of a condition from inhalation of arsenic from wall paper dust has been observed to produce symptoms of arsenic poisoning, characterised by several manifestations of sub-oxydation.

Same thing is true of mercury. (Hg), and the common amalgam fillings in the teeth.

(10) Malignant growth when localized represent two abnormal pathological processes. (a) weakening of the normal cell life in the locus of the cancer, (b) excessive stimulation of cell growth on abnormal cell basis, creating excessive demand for cell nutrition. Abnormal growth is neoplastic growth and the materials drawn from the rest of the body become intoxicated as they accumulate.

(11) Localization of all cancers take place in connection with, (a) organs which have passed out of normal service, this is the reason for the frequency of the mammary gland and uterine cancers, at and after the period of the menopause. Same thing is true of the common frequency of the cancer in the liver in the male sex. The liver in this case being defunctionized, (b) organs that are subjected to excessive use, where the excessive use results in an accumulation of biproducts and these biproducts destroy the function of the tissues or organs, as in the lip of the tobacco smoker.

Here we have resultant subcatabolic products and the cause of this process may be enterotoxemia, absorption of poisonous parts of undigested

food in the intestine, especially tox-albumens. These tox-albumens enter into the blood and from there go to the nervous system and weaken the metabolic process of the nervous tissue cells. This results in toxicity of the trophic processes of the nervous system.

Normally in the organism we have detoxinating glands, pineal, thyroid and adrenal bodies, and these are able in the normal condition to destroy intestinal toxins. When we find an insufficiency in the action of these we have the foundation for toxic absorption.

Here we note that detoxinating glands lie between the two fields of the organism we have already mentioned, metabolic and bioplasmic. Nothing can pass from the metabolic field to the bioplasmic that is toxic without passing through these glands, and if these glands are normal it implies that no poisons enter into the bioplasmic field. When the detoxinating glands are insufficient because of inactivity and are unable to prevent toxic matter then bioplasm becomes the field of toxicity. It is this that represents incoordination between protoplasm and bioplasm.

(12) Another condition absolutely essential in sub-catabolism is acidemia, this is produced in the blood by the appearance of what we call sacchro-mycos, with resultant acidification.

The result is to change the vital constitution so that when sub-catabolism is at its maximum there is reconstruction of all the cells based on sub-catabolism instead of normal catabolism. Main etiological factors therefore that are secondary we find hyperacidity, found in connection with excessive use of carbo-hydrates, alcohol, acid of any kind, acid fruits and vegetables and food difficult to digest.

This food requires to be acted on by the acid formation, the result being increased in the general acidity.

(13) Another condition that must be mentioned as direct contributing cause is inoculation of virus or poison into the system, the virus or poison being picked up by the blood, lymph or both and carried to the entire body or system.

In carcinoma the lymph are liable to be involved because dissemination in the tumor or of the tumor takes place through the lymphatics. In sarcoma on the other hand, metastatic changes are established through the blood, the lymph system being seldom enlarged. In benign tumors in contrast with the malignant tumors, lymph is seldom if ever involved, the blood being the field through which dissemination takes place, if there is any dissemination.

Cancer then or malignant diseases represent a disease in which we find histologically (1), the rapid proliferation of cells, the cells being of a lower order than the cells of the organism. (2) This proliferation of cells is nourished either by the blood or lymph and in rare cases by both. (3) The type of malignancy is determined by the nutrition or rather the medium of nutrition which is blood or lymph. The malignant condition then represents a lower order of cell life, nourished by the visciated nutriment carried to the field of proliferation by the blood or lymph streams.

The question arising is, Is it right to inoculate in to the system a substance consisting of rapidly growing and developing cells. This is the reason why Dr. J. M.L. always objects to vaccination, namely, that vaccination is biologically unscientific.

Dr. R. T. Cooper of London, makes this statement, "Cancerous diseases may arise from any form of separate infection, whether conveyed in the channels of the blood or channel of vaccine lymph. Of late years I have met many cancer cases all of them dating back two years and in every instance where this duration existed the disease had come on subsequently to vaccination during the last epidemic of Small-Pox".

Vaccination represents injection into the system of virus through a media of rapidly growing cells. What is the effect of the injection of such cells? Effect is to disturb metabolism and to bring into conflict the cells of the organism and the injected lymph cells.

Here the question is, What is the result of this conflict? Result is the destruction of the

normal cells at the expence of the rapidly developing cells and the net result in the organism is modified catabolic changes, that is the establishment of a sub-catabolism, such as is found to be typical of all malignant diseases.

In summarizing the points we have already established we believe in the original association with or resulting from (a) separation or dissociation of cells (structural), reducing the structural to the embryonic state of physical separateness, the lack of physical contact or relation such as we find in the normal adult tissue. In this reduction to the embryonic state we have (b) The disturbance of co-ordination between cerebro-spinal and sympathetic systems, with the undue prominence of the sympathetic system. (c) Accumulation of effete, waste or toxic matters, whether this results from auto-intoxication, perverted metabolism and nutrition or active poisoning by positive poisons introduced into the system. This corresponds with perverted pathology or hyper-physiology. (d) How do we account for these toxins? Dr. J. M. L. believes they are of nervous origin. Originating in nervous exhaustion or depletion, that is in a disturbance of trophicity. This localizing all originates by neurosis in trophic nerve processes at the point where we find the locus of maximum exhaustion.

This neurosis on the trophic side originates, (1) in the nervous system, weakening and depletion in connection with the neural bioplasts. Some say the nervous system is immoveable and non-contractile. In the embryo the nerve cells have the amoeboid movement but settle down in the spinal canal as the human body matures, they float around in the cerebro-spinal fluid and are called bioplasts, these bioplasts in the normal individual maintain normal tonicity of the tissues of the body. If these bioplasts degenerate under trophic conditions this gives us embryonic cell condition and a state of physical separateness in the localized tissue that makes waste or toxic accumulation possible. (2) How does this accumulation localize itself? It settles in the diseases at the weakest point physiologically or where the strain of vital activity

is at its maximum. This is the point of greatest weakness and lowest vitality. In the physiological anatomy of the organism normal vital distribution and life expression takes place there is structural mechanism, hence at the point where the strain is the greatest or resistance least the cyclonic eruption in the organism becomes local.

This is to be interpreted in the light of lesions which disturb the adjustment to the point of greatest strain or least resistance or occasion as distinguished from the cause arising in connection with the nervous exhaustion. Nerve exhaustion here includes both blood and nervous supply, because nervous system replenishes the blood and the blood in return supplies materials to the nervous system for energy and nutrition.

This nerve exhaustion may be produced by, (a) toxins that are found in connection with the system or its parts such as the localizing of malignancy in the tongue or lips of tobacco users. The poison may act also in the normal body, if poisons are taken in excess of the amount which the system can dispose of. Up to the limits of its capacity the body will exclude all poisons from its vital centers. Beyond this limit especially if toxins or poisons are taken in continually increasing doses, accumulation takes place and reaction follows.

(a) This accumulation and reaction are on the toxic basis. (b) Nerve starvation may represent the cause of localization in connection with the nerve exhaustion. This nerve starvation is found in localized field of trophicity such as the stomach following dyspepsia, ulceration and hyperacidity. (c) Excessive activity up to the point of exhaustion may also be the cause of localizing nerve exhaustion. Here we have visceromotor and nutritive types found particularly in connection with the over and non-use of organs resulting in hyperplasia and hypertrophy.

Illustrations of this are found in the reaction upon the pelvic organs from continued child-bearing under exhausting systemic conditions, also in the field of sexual excesses and non-child bearing. (d) Granted the existence of the occasion that focalises the condition, the growth we find in the malignant

tumor is simply that resulting from, (1) The accumulation of waste matters, (2) Development of abnormal tissue, on the basis of visciated nutritive substances.

Dr. Senn after traveling in Africa and the uncivilized Islands came to the conclusion that cancer could be prevented by a returning to the simple life. He claims that the nearer man approaches the animals of the lower life the nearer he becomes insuseptible to cancer. He confirms the idea formerly expressed that cancer is practically unknown to the interior of Africa.

Civilized man is like a hot house plant and cancer is due largely to over and high living. Cancer is a disease of civilization primarily diseases of over indulgence. I have found that primitive people are immune to its ravages. Women of the present day have great tendency toward cancer because of their high strung and fashionable lives, hyper-nutrition, Tendency in this case becomes cancer because cancer is the extraordinary development of tissue due to over nutrition.

4-29-1909.

Fundamental principles (physiological) under lying abnormal growth. This raises the question of pathological physiology.

Practically nothing has been done in the field of investigation in connection with pathological physiology. Pathology and physiology being regarded as separate sciences. Neoplasm implies the existance of a new form of life of lesser order implanted in the living tissue of an organism of a higher order. Here we have both pathology and physiology with the result that instead of either pathological or physiological condition of life we have combined pathological-physiological condition.

In order to clear this subject up so that we may understand what is implied in the development of abnormal growth we must try to explain the relation of the pathological growth to the physiological development. The primary constituent of bioplasm is

water the solid matter being suspended in the fluid in the form of an emulsion, this bioplasm so constituted represents naked matter. Certain bodies are found in every cell both of protoplasm and neoplasm, these bodies are called primary substances because they are essential to cell life and growth.

This proposition has been demonstrated by Dr. Kosell. Proto-nuclein according to Kosell is the primary substance found in all neuroplasm, developing and environing protoplasm. This proto-nuclein is derived from the organic substance namely, the blood forming glands and blood regenerating glands, according to this it represents an original lymphoid substance of glandular origin, the cell matter being found in an uncoagulated form.

The most minute bioplasmic substance always has a center of vitality in the cell called the nucleus. In the bioplasm this center has never been named but represents a point towards which all the bioplasmic substances gravitate on the principle of cohesion. To this vital center of the bioplasm the cell nutritive matter is carried and then to the circumference, (a) to be vitalized by contact with the vital center, and (b) enter the cycle of movement from the center to circumference of the organic substance.

All the new bioplasmic substances are formed in these centers, this substance which was non-living in food form comes into contact in the vital center with the matter already existant in that center and takes on the characteristics and properties. This represents transformation of the non-living namely, proteids in the blood to living matter, active proteids found in the living cell and especially the neuceloproten which represents primary substance.

Here we have in the field of pathological-physiology a complex series of processes that represent distinct reproductive evolution;-

- (1) The bioplasm of the center and also primary substance which selects the nutrient matter from the blood
- (2) The blood in turn represents tissue and as such is formed by bioplasmic processes.
- (3) The white blood cells represent the real element of the blood

as a tissue and the other corpuscular forms being disintegrated products in the field of regeneration of tissue, (blood) (4) Vital action takes place and is determined by the center of bioplasmic activity. Vitality acts in and manifests itself through certain bioplasmic centers, this activity takes place in connection with matter, (furnished by food) that comes into these centers from with out.

The entrance into and contact with these centers of activity resulting in the vitalization of non-living matter.

According to this the unit of pathological physiology is not in the cell but the bioplasm. The impregnant ovum is the primary origin of all vital substance in the newly formed organism. With out these centers of life and motility the new organism would be impossible, hence all vital actions are limited to existing bioplasm and this bioplasm in the centers of life render possible the physical, mechanical and vital phenomena that we designate living matter.

According to this the bioplasm is the original living substance and has in its self independant of the cell a reproductive power, that is it possesses a vital force which it can project in to the non-living and excite affinity which draws non-living substances to be vitalized and then projects this vitalized substance toward the circumference in organized form as living substances. The fundamental characteristics of bioplasm are, it divides and sub-divides substances drawing in and projecting out what was originally non-living matter and causing these substances to pass through formative changes of changin non-living to living, hence bioplasm of the neuclein in the embro-represents formative center with in the neuclein substances. This neucleus bioplasm divides and sub-divided in the substance of the bioplasts, these bioplasts represent an inherent capacity of taking in food, vitalizing it and projecting it our to the circumference, until the fully formed tissues are forced by the bioplasmic processes, in these processes of tissue formation the tissues and constituted organism are definitely formed.

The differentiating point of the nervous tissue is development. The nerve tissue being the last to reach mature development and as the last developed tissue it becomes the master tissue, thus the neoplasm becomes associated with the nerve tissue and this becomes the field continued evolution because the nerve is the last and most highly developed tissue. Here lies the physiological secret of absolute force of nerve tissue over other tissues of the body.

According to this we have two types of substances in the body, from the time when embryo development takes place until death, namely, forming and formed bioplasm.

The forming bioplasm is represented by the bioplasts and the formed bioplasm is represented by the tissues of the body. This explains action of the nervous tissues on the organism in connection with food, oxygen and water, when the proper adjustment of these are found in the field of development and nerve tissue controlling all other tissues in the organism. This explains why nerve tissue represents center of vitality or vital force and only from such centers can other centers be reached.

True vitality is nerve vitality and true regeneration is that which takes place from, is determined, and actually takes place within the neural-neuclein-bioplast field. This principle is both applicable in health and disease. If bioplasm increases too rapidly the developing power is weakened and the vitalizing power is impaired and the organism suffers. Net result is tissues which make up the organism become soft and weaken in functioning.

Reason is if we increase rate of bioplasm formation we lessen capacity to bioplasm to mature. This increase in bioplasmic activity may be carried to the point of absolutely preventing tissue development altogether. This means that nutritive matter is rushed to rapidly through the center of vitality to be vitalized. This is represented in inflammatory processes and in the vibratile state in which nutrition takes place too fast, making it impossible for the organ to assimilate and the result is disintegration,

degeneration, and combustion, resultant heat production in excess which is the cause of death.

Bioplasm normally lived very slowly, and takes up nutritive matter slowly and slowly projects the vitalized matter out to the other tissues of the body. In the inflammatory state bioplasm grows rapidly for a time and then becomes static in new matter just formed to be projected outward. This static condition will present new bioplasm formation, damaging bioplasmic formation of the body.

This explains in cases if the patient's body has over come the disease and the organism is unable to recuperate, patient simply lives until bioplasm is formed and reformed itself with out any possible regeneration. This also explains why destroyed tissues and organs can not be reformed in the higher orders of life because formed and structural tissues are formed from structureless bioplasmic substances.

Here is the importance of lesions affecting the fluids in which structureless elements are found. The epithelial and connective tissues are most liable to rapid increase because vitalized elements of these are less closely bound together than those of higher formation. This is the reason why structural dissociation is more possible and takes ~~pos~~ place more rapidly in epithelial than in any other tissue of the body.

Hence every form of bioplasmic tissue, especially epithelial connective tissue is liable to develop pus corpuscles, these representing the degraded and disintegrated bioplasmic corpuscles, in this case development is represented by pathological growth. In these cases bioplasm lives too fast, is over fed and results in softening and flabby tissue and loosely associated structural elements. This is why we find greater suseptibility to cancer in the obes.

According to this the active agent in diseased condition is degraded bioplasm and elements, hence pus corpuscles we find in pyemia, etc., the bacterii and germs we find in infectious diseases all originate from defective bioplasm in its pathological growth. The pus and germ cells therefore cannot be

classified as the causes of diseases except in the field of propagation. These pus and germ cells are products of certain changes that takes place in the vital bioplasmic centers, an accumulation of nutrient elements that favor the growth of the germs as soon as disturbances of bioplasm exist.

Marshand, Orth, and Hausemann, said positively as a result of their investigation "The great majority of cancer parasites that have been seen of late are degenerated products of bioplasm. Hence malignant tumors as neoplasm or nucleo-plasms originate from proliferating elements of the organism, the so-called vacuol substance with-in the cells and represent result of cellular hypersecretion or hyperbioplasmic processes.

The probability is that in all cases of diseases vital action is too fast, the vital center causing to rush through itself the nutrient matter with increased vital activity, lessening the capacity of vitalization, lowering vitality and disturbing equilibrium, e.g., (1) In infectious diseases, infection takes place by meta-static action or intoxicated parasite of suitable culture field. Infectious process is first primary and represents reactive change of tissue. All cases of infection are similar, the original field being inflammation. (2) In malignant growths of nucleo-proteid there is also metastatic action from proliferation of degenerated bioplasm implanted in tissue of suitable culture field.

This proliferated tumor cell or tumefaction bioplasm living and independent life on the substance of the body changing these substances into its own characteristic constitution. Results in both these cases being too much blood, heat and nutrition. These are three conditions that favor the inflammatory process, purulent, febrile, and toxic states, as well as development of germs.

According to this the primary starting point in all diseases is deranged and obstructed vital activity, that is (a) any change in vitality itself or (b) change in its expression through structural elements of the organism.

secondary to this change the disorganization in vital expression reacts on the metabolic cycle causing rush from circumference to center of nutrient elements to quickly to be taken care of in the vital centers and this produces a mass of vital products. These products represent degeneration. (3) the pus corpuscles and germs are developed and rapidly propagated in this favorable medium because disorganization in the vital centers produces lack of control over vital activities with resulting mal-nutrition.

The nerve tissue stands highest in the scale of these processes because this is the ultimate tissues. The current of nerve force that passes along the nerve fibre is generated in the cell. These currents are associated with the nutrient cell axis. If these nutrient processes become over active the minute capillaries of the blood vessels communicating with the blood vessels of the anterior column of the spinal cord becomes irritated and this results in transmission of efferent impulses to the motor fibres in the anterior column of the cord and a constriction of the vessel walls and lessens the amount of nutrition passed into the tissues. Here we have an unbalance of the entire nutrition and metabolic apparatus. The same nervous apparatus must restore the nutritive equilibrium, equalize the blood supply and balance the nerve forces if the organism is too recuperate.

This means, supply of nutrition, regulation of heat, balance of nervous forces are essential conditions to be preserved in connection with the arteriolar wave activity, if the organism is to be restored to normal. All these nerve centers and fibres change gradually by formative processes in the bioplasm of nerve tissue and only when bioplasmic vitality is preserved can all normal functioning continue.

Nervous forces are degenerated by the change that takes place in the bioplasmic centers. These centers are closely associated with the sensitive peripheral terminations in connection with the special senses and other and organs. This is a physiological illustration of Head's law. This means bioplasmic substances from centers

of the neucleor nerve vitalized field pass out in connection with the nerve fluids to the different terminal apparatil which are in close connection with the central nervous system. The activity of every organ and tissue of the body is subject, therefore to the action of the neurone cell in which bioplasm is found in greatest abundance, by nerve cells which continue to develop after rest of nervous mechanism of the body has reached maturity.

In caudate matter of the brain we find centers of this bioplast formation and nervous force generation. In bioplasmic substances that are found in the gray matter of the brain we find substances that are not inclosed in a cell wall, these being supplied with blood and are subject to rapid changes. In this field the bioplasts are changin in connection with the nutritive and metabolic cycles giving origin in close relation to their nerve fibres. These (a) pass out as vibratile waves along fibres to every part of the body, (b) vitalized nerve fluid that carries vitalized force to all nerve tissues, (c) this will account for the distribution of bioplasts that are found in the end of the nerves, centrally and superficial. (d) This forms a link in the chain that connects entire tissue structure, (formed tissue) to the vital centers, (unformed tissue or substances), here we have basis of surface lesions, in the tissue structure field.

These bioplasts are very active, (a) in the formation, preservation, and renovation of the entire nerve apparatus, (b) in the development of the wave like currents that act as stimuli to the nerve centers. These centers with their bioplasm are the origin of all nerve impulses. (c) this bioplasm is actively engaged in thermogenic function especially when there is unbalance in the nerve economy.

This accounts for when we find in pathological conditions an inflammation which is a generation of heat from nerve impulases. The heat is not converted into nervous forces but the heat accumulates and causes unbalance. (d) this explains relation to nerve system of temperature development,

physiologically and pathologically. Heat tends to promote destruction for heat is substituted for nervous force and it operates in the field which should be for nerve forces. This explains visciated nutrition of the body and it is drawn towards a malignant focus. (e) vitalized fluid passes out along nerves normally and this is the basis of trophicity, abnormally this is basis of trophic condition of emaciation as we find in malignant diseases.

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Vital force neither increases nor decreases. The change in vital force is one of distribution, this is the reason why structural lesions are found so frequently, structural lesions interfering with the vital force distribution. Hence order can be restored to the organism only by orderly distribution of the vibratile activity which is synonymous with vital force, as this activity is projected from the vital centers for the purpose of keeping organs and tissues in rhythmic relation to the organism as a whole.

This means vibratile adjustment, and it must take place by establishing order in the structural economy because vibratile activity means structure pulsating in connection with the rhythmic activity. This rhythmic activity represents rhythm of life. This principle of vibratile adjustment represents the law of cure in general from the chemical, physical, or mechanical side, in either case there being the conversion into a vital equivalent.

The change in the current of activity however must begin at the center, namely in relation to the vital force, curative effects being along the pathway of least resistance, via, the nervous system, this distributes the vital strength, (vibratile activity) to the weakest part, bringing up the weak to the standard of the strong and restoring harmony through vital forces.

This predices that the process of degeneration representing the field of pathology, begins at the periferal center of the vital process, the great center vital activity, and gradually go from this periphery inward giving up its control over the peripheral substance which was previously bonstructed under the formative action of the organic life force. When this relative between central life force and peripherally formed substance is broken the peripheral substance is handed over to the lesser order and becomes subject to change which chemistry, physics or preverted physiology may either produce or permit.

Result of this is an abnormal growth or neoplasm of a lesser order than organic life, and this implies a preverted development with foreign accumulations at the focal point of lessened activity, that is the interrupted relation between the vital force and its medium of expression, (or structure), gives origin to the neoplasm. It is this that gives rise to local morbid growths. This explains why so called Osteopathic lesions are of so great importance, because they lie on the surface plane of vital expression and when the hold of vitality of the structure is most liable to interruption.

We have here two propositions, namely, interrupted relations and neoplastic growths, that is what we call maladjustment. From this we can see that in the pathological expression it is necessary that there should be a double change with tertiary reaction as follows;- (1) With drawal of the central life force at least in operation, leaving the local point of weakness with out the connecting link in the chain of life or vital relations, sometimes resulting in degeneration of the bioplasts themselves. (2) This focal point weakened and left to itself in the struggle for existence is under the influence of obstructed circulation, interrupted nerve current, uncontrolled or suspended nutrition, caused by lesions in structure and becoming the center of abnormal development and growth.

This growth and development is subject to physical, chemical, or prevented physiological laws and processes. (3) The obstructive lesions in the field of vital expression, namely, articulation of the tissues and organs with one another and cuts off communication with the vital forces within the cycle of metabolism and nutrition and vital manifestation through different forms of tissues and organs, namely, structural parts of the organism.

This obstruction between vital centers and peripheral center is the foundation of incoordination, lack of co-relation and disturbed symptomatology of diseases. If these processes of degeneration or degradation are checked before they determinate in death and produce organic death, the reverse order must be followed in regenerative processes and renewal of vitality. This reverse order is as follows, the material parts of the organism, that is structural parts, must be gradually drawn with in the cycle of central vitality and the accumulated wastes or foreign materials must be thrown off because these materials are dead so far as organic life is concerned.

Result of this process is organic regional adjustment which takes place as basis of restoration to normal.

According to this the vital principle of physiological life is coordination, co-operation, and adjustment. On this basis there can be no organo-disease or organo-therapy because no organ stands alone. Sympathetic relation of the nervous system being the primary factor in the nervous system and its development. This sympathetic relation making it necessary that organism should be considered a common wealth of cells.

This makes the great medium of all therapeutics or curative action the combined cerebro-spinal and sympathetic systems, each one contributing to the united economy. The former contributes control in regard to the trophic function and the latter regulates along vaso-motor lines, blood supply and consequently nutritive supply of the entire

organism including cerebro-spinal nervous system being under sympathetic control. This structural framework of the organism is functioned in relation to the rhythmic activities of all soft tissues and these activities are regulated by the coordinated motive powers of the vital force on four planes of vital manifestation, namely, (1) Reflex plane, (2) Automatic, (3) Voluntary, (4) Volitional plane of activity.

These planes are not separate and distinct although physiology implies they are. The co-ordination of these four planes in the material organism constitutes what we call life expression or manifestation of deeper life principle on the plane of the physical and material, namely, body organism and its structure. Here we find fundamental principles that explain practically all physiological pathology of all types of diseases.

There are many theories, microbic and non-microbic in regard to diseases, none of which is absolutely correct, e.g. The true theory of the origin of the so-called neoplastic disease the cancer is to be traced to the germ or to tumor cell but this is not a germ or cell as an isolated germ or cell but a germ or tumor cell developed in the degenerative processes of the organism. In conjunction with the germ or cell there is accumulation of effete matter, both of these factors must be combined in order to give us true theory in primary origin.

Dr. J. M. L. believes it is constitutionally traced to organic disturbances. It probably originates in nervous exhaustion, hereditary or other wise, depletion of the nervous system taking place primarily from bioplasmic side. This primary weakness or weakening reacting upon and producing localized field of development and this local field of development or waste accumulation takes place in the origin then the cancer.

Same principle applies to all neoplastic diseases as, (1) Primary in neural bioplasts, in origin we must remember all nerve cells are ameboid and only when they settle down in the neural tube do they lose their characteristics.

The nerve bioplasts which lie at the foundation of the regeneration of the nervous system and practically of the entire organism originate in the nerve cells and these nerve bioplasts retain the embryonic characteristics of the original nerve cell, namely, the amoeboid characteristic, floating around in the cerebro-spinal fluid as their field of operation.

These bioplasts may degenerate and it is this that gives the foundation of migratory cells as fundamental condition that lies in the basis of neoplastic condition.

(2) Having the origin in these migratory cells the problem of pathological physiology is, how does this condition become localized? It settles down in the weakest point of the particular organism in which it is found. The question then is what is the weakest? It is the point of least resistance and lowest vitality.

Pathological physiology teaches us it comes on with nervous exhaustion, neurosis, whether this is produced by, (a) toxin in connection with the intoxication of the system, such as, nicotine, in relation to the lips and tongue of the tobacco user. (b) in nervous starvation, as in stomach of the dyspeptic. (c) points that are made weak either by over stimulation or excessive activity up to the point of exhaustion, such as we find in pelvic and mammary gland fields.

The same principle applies to the liver, especially in connection with cases of excessive activity due to over indulgence, and to the intestines particularly where frequent cathartics are used to stimulate secretion. All so to the pancreas where excessive demands are made for trypsin ferments to keep up digestive processes.

In these cases primary and secondary lesions may exist in the area corresponding with the weakness. Another series of lesions may continue or develop as the weakened condition begins to react on the functional activity of the organism. Here the local depletion reacts on the organic vitality and results in a mortified structure which we call secondary lesions. (3) Given focus of origin in the neural bioplasts or growth of the neoplasm is one of tumor

implantation in connection with the accumulation of waste elements, (waste elements are anything the system can-not use), plus tumor organism living upon and growing in connection with the using up of the substance of the body, that is any neoplasm or morbid development takes place as abnormal life process in focal point of the disease, which is the point of greatest weakness in the organism.

The accumulation of waste or effete matters is a process of evolution of the backward order, the weakest part of the organ being most susceptible part.

Next question is, how does this effect neoplastic condition? Nutrition is exhausted and prevented, nerve force is exhausted and organic resistance is impossible, hence growth which we call neoplasm continues and continues always in the abnormal type. It lives and grows at the expense of the organism. Emaciation, toxicity, and ultimate death of the organism are simply results that follow from the neoplastic development.

Etiology:-

In the discussion of the subject of Etiology we must take in account the exciting as well as the predisposing causes which lead up to the development of the disease, etiology from lesion side is very easily explained because lesions are found in particular cases, either, (a) in the particular field that corresponds with the weakest point of the organism or, (b) in reaction of the weakest part on the organic vitality. These lesions are muscular osseo-ligamentous, and probably osseous, involving any of the causes, restrained or modified mobility, (c) increased connective tissue, (d) increase of other soft tissues.

These lesions act in several ways in the etiological field, (1) As direct obstruction to blood and lymph circulation, (2) As direct obstruction to the wasting function of the lymph, here the lymph bathes all the tissues and if this function is obstructed there is possible accumulation of waste or toxic matters, either in the tissues or between them, (3) Impeded venous blood flow, this producing

stasis of the fluids and lack of elimination of the wastes. (4) Direct irritation of the tissues involved in the lesion field. Perhaps most common cause in neoplastic field is direct interference with lymph drainage. This interference taking place by some obstruction to the lymph vessels or indirectly through vaso-motor or general sympathetic nerve supply producing obstructive influence and by reaction limiting washing function of the lymphatics.

The special lesions that have been found may be classified ~~xxx~~ under three heads;- (1) Incases involving structure of the mouth and neck, lesions in the cervical and upper dorsal, also of the clavicle and first two ribs, contraction of the cervical muscles producing anterior and posterior cervical tension with the dragging of the head and lower part of the neck, interfering with the articulation in the cervical region reacting on the blood supply and especially on the lymph functioning. (2) In cases of thorasis tumors we find lesions involving clavicle, first two ribs, upper six ribs, third to sixth dorsal vertebra, humerus, acromion articulation and muscular rigidity in any of these fields. These lesions react vaso-motorly or visceromotorly on the secretory field. (3) In cases of abdominal and pelvic neoplasms lesions involving the lower ribs, diaphragm, cartilages around ribs, anterior and lateral lower dorsal and lumbar lesions, innominate lesions, sacro-iliac lesions, femor-acetabulum lesions, abnormal contraction of the soft tissues, especially increase in the soft tissues in sacro-lumbar and femur fields, cutting off blood supply to the internal structures and keeping an abnormal amount of blood in the superficial field, thus preventing the normal amount of arterial blood from reaching the pelvic field.

In the field of the practice of medicine, general view of the origin of these bioplasts is traced to a germ. The best account that we find is in, Practice of Medicine, by Dr. Robert Barthelow, in which he says, "Predisposition and heredity play an important part in the causation of cancer."

They are undoubtedly the most influential factors. The inheriting tendency may not be detected because of the behavior of the tendency in the system, it skipping several generations and manifesting itself in later generations." Cancer then is presumed to originate from germs, in line with this we find, which Holm's Surgery, has indicated, that surgical dealing with cancer has shown descriptive phases that are found in different types of cancer. Germs vary with the form of cancer or growth. The question then is, Is cancer a germ disease? Various investigators in passed times have announced its discovery.

Dr. Bra calls it a fungus growth, or germ, The editor of the American Medical Association Journal, May 27, 1899, says, all efforts of bacteriologists to find a distinct germ have been unsuccessful and he concludes as follows, Such investigations have not advanced our knowledge of the cause of tumors a single step.

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Marshand, claims that germs retard specific infections. Infectious germs are absent entirely in the formation of the metastatic tumors of cancer patient. Parasites of the malignant tumors, we found before to be products of bioplasmic degeneration.

Weber and Lobe claim that no demenstration has been made of the existence of a cancer germ. Conculsions of Lobe are as follows;- (1) No micro-organism has ever been seen microscopically or other wise as a sarcoma cell. (2) It is not at all probable that any micro-organism living out side of the tumors cell could be the cause of sarcoma. (3) It is also improbable that any micro-organism looking like the bacillus tuberculosis or belonging to that class of germs and living out side of the tumor cell could excite a condition of saroma.

The greatest work of the Father of Pathology, Fishal, is the investigation of the morbid

growths. Out of his investigation he involved a theory of diseases which involves cells which are said to be the life and origin of all diseases. According to this theory each cell has its own life and the organs and tissues represent combinations of cells. Diseased conditions arise from disturbances in relation to the cells and tumors here may be of cells, according to this pathological physiology, that are heterologous, that is they are different from the tissues in which the cells deposite.

Cancer then would be regarded as a cell disease representing a hetero-hyperplasia in which there is rapid proliferation of cells to the structure in which the cell is implanted. Cancer is always characterized, (a) by rapid growth, (b) by the rapid growth of the heterologous cells, (c) carcinoma being always localized in the same superficial tissue structure, epithelium, while, (b) is always localized in the deeper connective tissue structures.

Among the predisposing causes with regard to foundation of all malignant diseases we place, (1) Vaccination, or any form of lymph or serum treatment. Here there is implantation of the rapidly proliferating cell of the animal protoplasm into the slow growing cells of the human subject and this tends to disturb life processes with result of ~~the~~ disorganization and structural derangement among the cells.

In line with this we make the statement that all poisons that tend to poison the cells of the organism have the same tendency. All forms of vaccine therapy must be classified as predisposing causes of malignant diseases. Cancer is a disease of civilization, being practically unknown in the interior of Africa and most of the uncivilized islands. Within the last two decades the death rate in civilized countries has more than doubled.

Dr. Dennis, claims for cancer, more than the sum total of deaths due to erysipelas, hydrophobia, tiphilitis, and joint diseases.

Dr. W. B. Clarke in the Medical Debate, Aug. 1899, says, "I have personal knowledge of several hundred cases of cancer and I here

assert I have never seen a case of cancer in an unvaccinated person. Marschands theory particularly confirms the theory of this statement. He states that in the toxic properties of the cancer cells, diminished resistance of the tissues give luxuriant growth to the cancer elements.

Here we have reason for the dissociation of tissue structure that is absolutely essential for the implantation of the malignant tumor or tumor cell. Question is, what prevents this in the normal body? In other words why is death rate from malignant diseases any higher, answer is, the resisting power of the organism neutralizes the toxic properties of the proliferating cells that are produced in the organism.

In line with this we have a report of the death of a nurse in the New York Hospital, a Miss Kilmer, from septic poisoning as result of contact of virus of cancer wound. Poisoning taking place through a cut on the finger and death resulting in 24 hours.

Among the predisposing cause of malignant diseases we must classify secondarily the result of conditions extending backward over the greater part of a life time. Prevention of malignant diseases means prevention of these contributing conditions that have lead up to the development in old age. Hence predisposing factors are essential from the stand point of preventive medicine.

Here question of malignancy arises, Is morbid growth ever benign? Answer is two fold;- All cancer is malignant and in addition to this we must make statement that all malignant conditions are previously benign. Therefore when ever we have any of the factors present that point to a benign tumor we have fundamental element of malignancy. This means primary trouble, (predisposing cause), is disturbance of the cell relations. This disturbance may take place, (1) in a group of cells displaced in their relations in fetal life made ready for aberrant growth and metastatic development at any time especially in old age. (2) Displacement of cells may take place

later in life, causes being nutritive, trophic, traumatic, by depletion, over use, non-use, over stimulation, etc., here we classify mechanical, thermal, and toxic influences as exciting causes of malignancy.

What is malignancy? Dr. J. M. L. believes it is the failure to maintain normal histological relations, that is cells or groups of cells growing wild and the lack of adjustment. What element holds control and balance among the cells? Fundamental basis is to be traced to a neurosis. Traced to the nervous supply, mucus membrane and glandular structure or connective tissues, these are fields of implantation.

Granted such a neurosis there follows a displacement of cells, structurally, this tends to allow development as well as primary development of new tissue growth. This means not a return to an embryonic state but a change from the normal condition into a condition of dissociation.

According to this certain group of cells except those under controlling influence of the nervous system (neurosis) become to a greater degree independent of the organism. That is the cells must be more or less dissociated from their neighbor cells. This does not mean separate. Degeneration or over growth may take place from the lack of control.

Housemann states that the cause of malignancy in all cases is to be traced to Anaplasie, that is the return of the cell to a less differentiated state than normal. This he claims can be demonstrated microscopically in the form of abnormal asymmetry of the nuclei of the cells. This goes on from generation to generation in the histogenesis of these cells until dissociation becomes so complete that co-relation is impossible.

We have demonstrated ourselves by microscopic examination that such an anaplastic condition does take place. Accompanying the growth of the carcinoma continues cells manifest this anaplastic development. This is not always found because

tumor cells resemble the continuous cells.

In all conditions there is a change taking place both in form and arrangement, increased proliferation because in inflammatory conditions there is separation of the groups of cells from the tissue cells, This explains the etiology of malignant tumors following upon connective tissue formation in cicatrical tissue field.

Another preparation of the tissue in the field is the change of the substance to the cell substance being toxic. This substance represents the destruction of the physiological structure of the cell. This virus in the malignant diseases is exceedingly virulent. This explains the death of the nurse previously referred to by contact of the open wound on the finger, the patient dying with all symptoms of intense poisoning. We find similar condition in septic-peritonitis septic-pneumonia, etc., which are frequent causes of death in case of cancer.

Question is, what creates virulence? The cells acquire it from the lack of influence supplied by the nervous system. The nervous system regulating normally all cell processes and in malignant diseases this nervous influence is lost and disturbances of the adjustment either of the nervous system or of the minute structure elements of the tissue results.

Here we find explanation of the etiology of the lesions we find in malignant diseases. These lesions disturb the influence of the nervous system and allow the local tissues to nourish themselves with the control of the nervous system.

(3) Among other lesions that open the way for malignant growths, (a) skin lesions. These are rough, horny, scaly, and cracked conditions found on the face neck and hands. This condition is found chiefly in florid types of the skin. In these cases the skin becomes hard and later these tissues take on the epitheliomata change represented by cell growth, infiltration, cracking, drying, and general breaking up. The oily seborrhic skin with ~~patches~~ patches that develop on the oily

surface showing themselves in connection with scaly and erosive conditions latter form the foundation for epitheliomata. In addition to this a warty condition of the skin may cause proliferation of new tissue and develop into epithelioma.

Scars from burns,boils,incision, etc.represent typical cell displacement that forms proliferation of the cells. Cracking of the lips and tongue from the use of the cigar or pipe,eczema,lupus,warts often furnish basis for singular displacement. Moles with excessive pigmentation tend to produce displacement. This is the case in cut,scared or burned. Rodent ulceration,injuries to the nails and skin,X-ray burns, in cases of lupus,enlargement of the sebaceous glands,these all may develop into malignant developments. (b) injuries or laceration of the mucus membrane of the tongue or mouth, mucus vaginal membrane,cervical uterine mucus membrane,ulceration by excessive acidity of the stomach,calculi from the biliary field,ulceration of the gall-bladder and cicatrix from the breast all these forms are predisposing causes to malignant development. (c) in the glandular structures stasis of the fluids with resultant enlargement and hardening,associated with the interference of secretions,liquid and hot elements, these are important predisposing factors to malignancy.

Here secretions of the glands, mammary and pancreas,where cancer is frequently found,are associated with the breaking down of the cells of the glands themselves. That is there is a continual process going on all the time in these glands.

What is the meaning of these predisposing conditions? It is that any cause which produces a loss of cell association or adjustment and interferes with the control of the normal growth may form a basis of malignant development with two fold results. (a) abnormal development of the cells and lack of adjusted development, (b) this opens up the field of nutritive and toxic substances which determine

the growth of sarcoma and epithelioma. Predisposing cause is scar, erosion, traumatism or an unbalance of growth. The exciting cause is to be traced to some lesion effecting the nervous system.

What is the nature of these lesions. The cerebro-spinal or restrained nerve system looses its control and the sympathetic system takes on an exaggerated function. Hence lesions on either side or both of the nervous systems. (4) One more important predisposing cause is senility of the tissues of the body. Here the real testing point is not in the age of the patient but in the age of the tissues. That is, retrograde degeneration, that has taken place. This degeneration is chiefly found in siphilitic and alcoholic subjects. Here the resisting power of the tissues is so lessened by hereditary toxic elements that suitable soil is developed for neoplastic tissue. Here heredity plays an important part in malignant tissues and tendencies, the tendency tending toward senility.

Great majority of cases of malignant diseases exist in these tissues which are under going degeneration. The appearance of epithelial degeneration is associated with this state of degeneration. This is especially true when cells begin to get away from the influence of the nervous system. Hence among short lived races cancer is practically unknown. Cancer is rare among races of hot climate because people are short lived and live on vegetables. It is rare in all tropical countries. Malignant diseases are unknown in Borneo, China, former India and among the Hindoos.

(5) Another predisposing cause is the habitual use of alcohol, when taken in small quantities and continuously. Alcohol when taken into the body enters into the blood and passes through all the tissues of the body until it becomes thoroughly saturated with the alcohol. In addition to this alcohol has strong affinity for the liquids of the tissues and when alcohol unites with the water it tends to produce dehydration of the tissues. This lessens amount of

fluids in the tissues with resultant tissue hardening and hindering waste elimination and preventing the washing out and elimination of waste and effete matters because the water is eliminated.

Result is retention of the waste with the tissues. This applies to all patent medicines which have a large amount of alcohol and which are taken in small doses continuously, and which have practically a continuous dehydration of the tissues, accumulation of waste matters, etc. this producing death from impurity of the blood. (6) Another predisposing cause is the excessive use of meat and an over supply of the nitrogenous foods.

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This is particularly the case in those who do not exercise the body actively, because the waste of the nitrogenous elements of the muscular tissues of the body is at its minimum. In such persons there is little need of, if any, for meat. In addition to this if alcohol is used habitually less meat can be assimilated by the system.

It is said by some that severe manual labor predisposes to neoplasms, the body uses up the food supply and in order to supply sufficient fuel for body heat the tissues are burned up leaving the tissues in a depleted condition.

According to this the predisposing causes that tend to neoplasms are conditions that form abnormal development of aberrant epithelium. In a general way it is true that if there is excess of anything that the body can-not get rid of in the proper channels of elimination this excess is taken up by the blood and carried to some weak point where it is deposited, making a dumping ground materially at that point.

As soon as this accumulation is excessive free circulation is obstructed and the tissues begin to die because of the withdrawal of the life forces or influences. This dieting condition

implies, (a) absence of physiological life action, (b) action of chemical force in a process of putrefaction, in which abnormal life of a lower grade develops on the dying material and extending out later to the surrounding tissues in order to get sufficient material to keep up the new life processes of the lower order.

(3) What takes place following this? This putrifying mass of substance is organized into a foreign living mass and sends out its waste in the general circulation as poisons to the system, vitiating the entire organic nutrition.

(4) Next question is, what are these materials which make up or supply this accumulation? (a) The field is provided for the accumulation in the dissociated of cell structures already referred to. (b) Materials deposited in this field of dissociation represent the waste of the system or those substances which over take the organism in its attempt to get rid of them.

These substances may be summarized in the order of their significance.

(1) Excess of carbo-hydrate foods. All carbohydrates taken into the body cannot be used by the body in its production of the heat and energy, result is to throw off excess of the glycogen on the service tissues such as the mucus membrane, producing excess of heat with tendency to such conditions as catarrh, congestion, sacromycoses, membrane formation and neoplasms. This creates useless waste in the internal surface circulation and explains why surface tissues are particularly always involved primarily in diseases.

(2) The excessive use of tomatoes, tomato acid has when in excess in the stomach the effect of producing capillary congestion, resulting in stagnation and semi-coagulated blood. This makes in large veins sluggish circulation and wastes deposits in the weakest part of the organism.

The same thing is true to a lesser extent of any artificial acid used in excess. (3) Excessive use of coffee, tea, tobacco, this tends to congestion

of blood resulting in venous stasis such as we find typically present in hemorrhoidal constitution. These also produce, especially coffee, discoloration of the skin with thickening of it, the carbonaceous substances from the coffee being deposited on the skin.

Tea, coffee, and alcohol tend to thicken the blood and clog up the venous circulation, then when the blood attempts to circulate greater deposits take place and net result is matter that degenerates or acts on the putrefactive basis, which means neoplasm. (Putrification is degeneration of tissue on a life basis that is lower than that of the organism in which it exists).

(4) The continued use of hard water. This means water with an excess of lime, sulphur, iron-sulphate, calcium, etc., The same particles that deposit on the side of the kettle in which water has been boiled are taken into the body, pass into the circulation and blood vessels and tissues and obstruct circulation, accumulating as waste matters in the system. Salt water is a necessity for the body in eliminating toxic elements and waste deposits.

(5) Continued use of baking-powers, soda in summer drinks, alum in bread and acids, in fruits and all mineral elements found in all of these tend to obstruct the digestion. Excess of lime-carbonates from excessive use of wheat bread, rye bread particularly and oat meal also act detrimentally to the system. These accumulate as waste in the spigastric arteries and field of the small glands and villa, resulting in stasis of blood inside the alimentary tract and congestion out side of the alimentary walls, stoppage of the blood flow, especially when aggravated by excessive use of alcohol, tannin which tend to produce accumulation.

(6) Certain classes of food which should have no place in the use of food, oysters, sardines, clams, all to be specified first. These are eaten with all the excrementations found in the body of the animal. The animal acting in life as a scavenger which collects wastes from the water

and carries it to the system of those who use it, Pork is of the same order, all flesh of lumpy-jawed cattle, storage meats, preserved meats and preserved milk go in this same list.

(7) Poisons, here we have the largest field in etiology. These poisons are hardly classifiable. Among these we must mention the common use of the red rubber plates in the mouth. In the make up of these plates there is, 40% rubber, 25% mercury, 35% sulphur. The chemical action of the mercury and sulphur produces a mercury bisulphide which acts, (a) as a direct poison in the system, (b) as a constant battery of a mild electric current that is continually deadening the mucus membrane of the mouth and ultimately of the entire body. Amalgam acts similarly setting up a continual current in the mouth which causes destruction of the tissues, and formation of waste products.

Vaccine virus represents a deadly poison which with every form of treatment, (lymph) introduces rapidly growing cells from without into the slow growing cells of the organism with the resultant disturbance of cell equilibrium. Nicotine and other poisons used in medical field destroy blood corpuscles with the result that the obstructions are thrown out on the skin and mucus membranes. This results in the breaking down of the cell walls. Poisons have the same action on the cells, such as arsenic, subphonal, anticanni, which operate on the cells to their destruction.

Most of the epithelomata that we find on the surface are associated with such causes, because in such cases there is no accumulation but continued process of poisoning and breaking down. In the sacroid type of neoplasms there are two processes, both of which are toxic, (a) hardening of the tissue, (b) accumulation of colloid material.

(8) Venereal diseases of all types, in many of the commonest of neoplasms, communicable gonorrhoea and syphilitic toxins as primary irritating cause. Same thing is true of the use of so called monthly regulators which are absolutely toxic, drugs used in abortion,

currettement of the uterus, this clears away the inside of the uterus but does not remove the accumulation on the out side. In addition to this,

(9) We find several conditions operating in a number of fields.

Dr. Bartholow says, "The points of election for development of cancer in the intestinal canal named in the order of frequency are the, stomach, rectum, secum, and flexurs of the colon. Of all organs of the body the stomach is the most frequent seat of cancer, more than the uterus which comes strictly next. (Practice of Medicine, pp52).

Significance of this can only be explained in relation to the organs specified, stomach the most frequent because it receives all food taken into the body and is the dumping ground. Hence epigastric arteries and veins are most frequently clogged with waste matters and irritated with poisons and enlarged with accumulations. This results in pain with regurgitation of food, vomiting, and a manifestation in other parts of the body.

If this condition continues food is forced through the gastric field while the accumulation continues and the toxic condition becomes more aggravated. If body is normal there are normal outlets for these wastes but when clogged irritated and poisoned as at stomach centers and later any other parts we get reaction of the bowels. The use of improper food, poison, etc, fills the body with accumulated wastes and the liver is the first organ that in this condition shows strain by becoming engorged. Then follows the spleen because it is the overflow reservoir for liver when ~~it~~ that becomes engorged. Pancreas which acts as a sugar refinery comes next. These organs become clogged with matter that should be eliminated and must find some dumping ground, hence these organs to protect themselves and save organic life throw the waste out of themselves and into the general circulation, which settles at the bifurcation of some artery or vein where the force of circulation is at its minimum.

The dumping ground is found in connection with, (1) parts of the body not actively in use or where use has been suspended or out lived.

(2) This is the reason why mammary glands and uterus after cessation of menstruation and child bearing, if any, becomes the deposit field for these wastes. In other cases where abortions or mis-carriages have been frequently produced by toxic regulators or by the use of hot injections similar field is disturbed. Reason for this is that in such cases the inner surface of the uterus is cleansed while the outer side which contains the arteries and veins is left uncleansed. Accumulations from other parts of the body take place around the out side of the uterus, ovaries, tubes as a result of disturbance in menstruation.

Similarly lack of attention in connection with the menstrual function also results in accumulation. Menstruation is a cleansing process or toxic elimination and should be treated as such. This explains why cancer attacks the uterus during its suspension. Mammary glands, uterus, ovaries, becomes filled with deposits and waste and so great does this become that the vital force is excluded and the organic field becomes a pile of putrified material, and which breaks out at some point, in which case we have hemorrhagic or any other type of discharging ulceration.

Same thing is true of all organs. In all these organs the arteries form a complete circulation on the outside as well as inside and the veins establish the drainage. Hence the deposits of material in connection with static blood means deposits on the inside or outside of the organ that deposits resulting in putrefaction and this putrefaction producing neoplasm.

(3) Another field of development of these tumors is external surface of the body, mucus membrane or skin. In these field there is a breaking down of the outer part of the structure in many cases this is produced by poisons, the poison acting locally destroying blood corpuscles and these corpuscles depositing at the point where the breaking has taken place.

This causes the process of eating which is characteristic of open wounds. Any poison or substance that is uneliminated from the system may operate upon the internal and external surfaces breaking down tissue and resulting in new tissue of a lower order. In line with this we find history of this development is marked, (a) itching sensation, (b) by roughening of the surface of the skin, (c) by development of papule, warts or some similar growth that bleeds, discharges toxic elements, etc. (d) process of development following this is called eating, sometimes it is called lupus, because it assumes this form. It is called cancer because new tissue is formed, in either case it is some waste form found in the tissue metabolism which prevents building of normal tissue, result is degeneration and disintegration. (e) in the two types we have different results, (1) Scurus, we have hardened growth resulting later in breaking to pieces. (2) In epitheliomata we have breaking down, ulceration, discharge this explains why smoker has cancer of the lips, tongue and mouth, and the eater who engorges with food has cancer of the stomach and intestines.

(4) What relation has a bruise, injury, traumatic strain to neoplasm? They produce either dead substances, waste elements, or static condition of the fluids, these furnish the nucleus for accumulation of poisonous materials. These materials when brought by the circulation accumulate with enlargement of tissue or where accumulation settled down there is pus formation and accumulation. This is why there is a discharge with an open wound. Traumatism also causes point of accumulation of discharge and disintegration.

(5) When we examine in the microscope the so called cancer cells. These are simply degenerated bioplasts which we find in connection is dead or waste matters of the system assuming abnormal cell form and begin to live as foreign cells, in with the debris. Every part of the body which becomes center of dead matter takes on oxygen and this forms basis of putrifaction.

(6) That are the so called roots in the

so called cancer growth. When the abnormal growth organizes there is a new circulation developed. The arteries formed in the shape of little suckers which are extended out to pull in the nutrition. Besides these arteries there are small filaments sent out to carry away the toxic elements, there is also filaments sent out to get nerve supply. These arteries, veins and nerves represent organization process of the neoplasm.

(7) The fact that oxygen accumulates in

this field of the neoplasm is demonstrated by the fact that in the process of breaking down of the cancer there is always fermentative processes, accumulated oxygen resulting in gas formation which is the most troublesome feature in the treatment. This is due to the fact that when putrefactive processes take place the dead and waste materials cease to be under the control of the vital force, hence when elimination takes place this waste and dead material is subject to physical and chemical changes because neoplasm and the accumulation is separated from the physiological life of the organism.

This physical and chemical change implies fermentative processes. If control of the physiological life is to be established in this neoplasmic field the fermentative process must take place in order that the accumulation can be made movable. This is why it is necessary to eliminate poisons before they settle down and become organized. The vital force of the organism has no longer any control over these materials because these materials represent new life subject to new forces. The only way to get control of these neoplasms is on the plane of the chemical, physical, and dynamic, and loss of the vital force control makes it possible for the germ action to take place because no germ action is possible until the vital force has handed over the substances to the chemical, physical forces.

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Pathology field.

In the field of etiology we have general constitutional origin of all malignant conditions or growths. Topographical origin as distinct from constitutional is distinctly local. Aside from traumatism other causes in the field of etiology the first distinctive stage in the pathology, that is in tumor formation proper, is exudation as a reaction to some type of traumatism.

In reality this represents pathological physiology, that is reparative process, and this process represented by the exudation is much in excess of the repair process, result of which is multiplication of the exudate which represents pathological stage. Under ordinary circumstances in which any neoplasm is formed the excess of the repair processes is absorbed, removed, or eliminated. In the pathological stage of tumor formation the excess is accumulated then in the later stage it is organized in the formation of a neoplasm.

All neoplasms up to this point are singular in origin and development, at and after this stage the neoplasm may result in three different types;-(a) in innocent tumor corresponding with previous neoplastic development (exudative material) (b) in sarcoma, if resultant tissue found in neoplasm field represents embryonic tissue. (c) in carcinoma, if resultant tissue in neoplasm field represents teritomatous tissue.

According to this the nature of the tumor depends on two things, (1) Organization, (2) Nature and extent of the organization process. Important point from the physiological side is that the starting point is to be traced to this fact, that it represents an attempt for reparative process in connection with or resulting from some traumatism. Meaning of this is no neoplasm can originate unless in connection with an attempted repair process.

All tumor pathology represents mortification of the process and result of cicatrization. All tumors whether malignant or benign have an innocent stage represented by reparative exudate.

When malignancy begins dissemination takes place. This is the cause of the expression of tumors after surgery, in other words, when the first stage of neoplastic formation is passed, surgical operation tends to disseminate malignancy.

Tissue tumor represented by the organization is of a lower grade of organization and this explains the reason why disintegration and necrosis are so liable to take place. In metastasis of such tumors the younger parts of the tumor are most active and these are picked up by the body fluids and carried to the weakest part or portion of the organism. It is these younger parts that we find in the fluids upon examination.

The tumor tissues represent the same type of tissue as the normal tissue, hence laws, nutrition, development, reproduction, are the same in neoplasm except the new growth, it being foreign tissue and its development being marked by lawlessness not found in the organism. Results of which are irregularity of size and shape of cells and a tendency to change from one kind of tissue to another.

In the development of a tumor it organizes by formation a complete system of blood vessels and nerves. In this condition the neoplasm is complete.

Tumors are classified, (1) Homologous, namely, those that are similar to the tissue in which the implantation takes place. (2) Heterologous, composed of entirely different tissue from the tissue in which the implantation takes place. This from a clinical side shows that tumors are benign or malignant. In pathology simplified tumors are benign in the origin and the origin of every benign tumor is a repair process.

Signs of malignancy may be classified under three heads, (1) Tendency to rapid multiplication, (a) by local recurrence following removal or, (b) by metastasis in some other part of the body. The basis of this multiplication is a tendency to disintegrate on account of a lower organization. (2) Tendency to development

from center to a localized mass, which result in out growths, (3) Depleted condition of the body producing a typical cachexia of cancer. In regard to physiology proper it to be traced to a parasitic origin and by others from a bacterial origin.

Cohnheim in opposition to this says, "Tumors represent retarded growth of certain embryonic structures which do not develop to normal during or at the same time as the other tissues, but begin to grow in some later period and develop at a too rapid rate forming the tumor organism".

Pathology then is as follows;- (1) Exudation is a reaction to some traumatic condition the reaction being a repair process. (2) Excess of this exudate which takes place in order to supply sufficient nutrition materials to build up the system represents localized multiplication of the exudation. This excess cannot be absorbed. (3) As soon as a too rapid nutritive condition is established this field becomes the dumping ground for the waste that comes from the body. Organization from this stage takes place on the plane of the neoplasm of rapid development. (a) in sarcoma the entire mass is walled in by nature until it develops into a large bunch, then disintegration takes place. (b) in carcinoma general organization takes place on a large tissue basis. (4) As nutritive processes in neoplasm are rapid we find;- (a) cells irregular in size and shape the younger being immature. This accounts for variation in structure of cancer and tendency to recurrence and metastasis and younger cells passing out through the fluids into other portions of the body, (b) this rapid growth produces toxic substances which are absorbed in the structures and has come to the surface producing cachexia. Degenerative processes are established at this stage, local and general and this results in, (c) anemia of the tissues, constitutional emaciation and loss of physical strength, (5) All waste elements of the system becomes a part of the nutritive constitution

of the neoplasm, hence the toxicity becomes a characteristic of the tumor. (6) As the tumor is not absolutely separated from the rest of the organism toxicity becomes a part of the organism and this accounts for constitutional wastes and loss of physical strength and ultimately septicemia and toxemia which causes the death of the patient.

Here the blood is involved as a tissue. The blood tissue is the most complex tissue in the body and this complexity pulls to malignancy and degeneration. There are two types of blood substances, bioplasm, in the white cell field, and protoplasm in the red cell field. In regeneration that takes place in the adult the lymph system manufactures the lymphocytes and these are progenitors of the white cells. This process takes place in the spleen, liver, red marrow of the bones and blood purifying glands. The red cell in the spleen and bone field is nucleated and these cells lose their nucleus normally before entering the field of circulation in order to give prominence to the hematin for oxygen carrying function.

The nucleated cells are not capable of this function but represent animal function and the oxygen taken in by them is used by them hence nucleated red cells are of no value to the organism because they use up oxygen which belongs to the organism for other life processes. In changes of the blood we have abnormal red cell types and this is the field of cancer and malignant development. (1) Young immature red cell, (2) irregular shaped, non-nucleated red cells. Lymphocytes originate in the lymph stream, tonsil, intestinal follicles, and malpighian tubules of the spleen these vary very little in different fields ~~in~~ except in size. Polynucleated leucocytes originate in the myelogenous tissue and bone marrow. In diseased condition of the body several types of these are found. In a pathological condition of the blood we find erythroblasts from an over producing of undeveloped red cells and myelogenic

tissue is also producing a parallel in ripe polynucleated white cells. Thus we find in malignancy two types of abnormal cells, corresponding with the red blood corpuscles and white cells, undeveloped cells of the latter type are marrow cells or myelocytes and this represents degeneration from the side of fat tissue.

Chief conditions between these and normal polynucleated cell are two fold;- (1) They have a single avoid nucleus, this responds to staining very poorly. (2) Protoplasm under staining becomes darker than that of the normal cell. These are two chief tests in microscopical tests of the blood in malignant diseases.

In metastasis of carcinoma that takes place in the red media of the bones large numbers of leucocytes are thrown out into the circulation and these are found well marked in microscopical blood examination. One point in the pathology of cancer is that the blood type of cancer is always anemia. This means more changes are found primarily in connection with erythroblastic tissue in which there is a rapid destruction of the immature red cells.

To meet and counteract this rapidly destructive process large numbers of ripe and unripe erythrocytes are found in the circulation and this is typical of malignancy. Later processes of destruction extend into the leucocyte field and an attempt to regeneration is found in ripe and unripe leucocytes.

It is this process of physiological and pathological cell production that produces typical loss of strength, emaction in malignant diseases. It is this that encourages cancer locally and if there is any possibility in the early stages of cancer development to improve patient attempt should be made to build up the blood so as to overcome anemia. If blood can be built up from this side then the cancerous development may be stopped.

Here we must take account of the fact that blood processes are rapid, more rapid than normal in malignant diseases.

These processes represent (a) lower

organization of the corpuscles and cell than in normal blood tissue. (b) greater facility to intoxication of these blood cells because they are of this lower organization type. (c) tendency to inoculate corpuscles and healthy tissue with toxic nutritive substances.

Intoxication.

In the second stage of pathological development of a tumor there is a distinctive poisoning taking place, this poisoning being characteristic of the tumor.

Pathology. Special space is given to intoxication in connection with malignancy because this is the one fundamental contributing cause of the continued development of the cancer. It is also the factor which exaggerates all conditions in the cancerous progress.

The perverted physiological condition leads up to morbid condition of the structure but the medium is always that of intoxication. This intoxication may represent active or passive poisoning. In the former case active poisons are taken into the system in some of the medicines or absorbed by powders, lotions, paints, wall-papers, and along with food producing an active slow poisoning of the vital centers of the nervous system.

In passive poisoning the poisons are taken in food and poisons produced in the system be subcatabolism remain uneliminated and intoxicate the tissue structure. The use of alcohol, opium, cocaine, arsenic, and different forms of patent medicine undermines the nervous system by vitiating system of these cells.

There is not only the physiological but anatomical changes the latter changes in the system may be due to perverted nutrition. In some cases using of alcohol or poisons in an alcohol medium cause the tissues to become hardened and infiltrated with the fat structure of the tissue degenerating. Congestive condition follows and in last stage in nervus system cells in liver, lungs, heart and blood vessels show a serotic condition. Demonstration of this point can be made easily, e.g., in experimental field we have demonstrated that by injecting a guinea pig with virus of anthrox or of diptheria the guinea pig will die in a

short time and by injecting the anthrax and diphtheritic toxin in food combination poisoning will take place that does not result in death but in a depravity of the tissues.

Importance of considering this subject by itself from an Osteopathic stand point is sufficient to warrant it. It is not sufficient to cut off use of narcotics or other poisons than to try to restore the nervous system by toning up the nervous system because this intoxications modify or have modified the healthy structure of the nervous system and vital organs so that by accumulative action of the poisons or poison they remain in the structure.

Regeneration is vitiated by this accumulative substance as long as that remains in the system and this means in the average case as long as the patient lives.

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It is not a simple case of mal-nutrition that we find in the opium or arsenic fiend nor is there the simple case of serosis of the liver in the alcohol field. Tissues themselves if they are tested will chemical and organic reaction to poisons indicating accumulation of poisons has taken place, that is, it is true we have demonstrated not only in the field of poison proper but also in the case of ptomain poisons, toxins of vaccination, typhoid fever, rheumatism and scarlet fever.

Why do we find; e.g., the patient that dies after a life long condition of malaise or neurotitis from a severe attack of typhoid fever does not die because system is infected with typhoid bacillus nor because of impaired nutritive and secretory processes but because nervous system and vital centers of the organs of the body have been vitiated. In the case of typhoid patient it is generally said patient dies because nervous system was so lowered that it could not react after the disease was checked. This is true but why? Because typhoid poisoning enters through the system to such an extent that recuperation is impossible.

Average doctor of every school does not take account of these latter lesions but keeps up the patient and cures the typhoid condition and lets the patient die of poisoning. We correct the gross anatomical lesions but we do not attempt to correct the minute anatomical changes in structural integrity produced by poisoning. Such procedure is like treating patient suffering from gas poisoning by correcting anatomical lesions and forgetting the action of the gas on the vital centers.

If a surgeon in the operative field leaves an accumulation in a wound with out proper septic treatment the law would hold him negligent of the life of the patient. If an Osteopath treats the gross anatomy of the patient and forgets antidotal treatment to meet poisons that are sapping the life forces of the patient we consider him negligent.

Chronic alcoholism accounts for more cases of nervous prostration than any other cause. We run across nervous wrecks constantly having heart trouble infections of the kidneys constipation, varicosed condition of the blood vessels and even insanity, in old age serotic liver and cancerous condition of the body.

Why do we find these? They are due to poisoning of the system. Tumor or growth is the outlet for intoxicated wastes and the means of nature for prolonging life of the patient. Next question is, shall we get rid of it? Answer is no and yes. No if nothing can be done, then tumor represents eliminative condition in the system. Yes, by dealing with tumor and vitiated nutrition. We can easily remove the tumor by the surgeons knife, but that does not cure the patient no more than killing pain causes disease. It is like using a germicide to kill germs while doing nothing to cure the condition that makes germ life possible in the system. Hence we must introduce something within the body of the patient or antidote the poison itself, or the body becomes the prey of poisons and poisonous action and this keeps body below vital par.

Demand for antidotal treatment rests on this proposition we have been unable to demonstrate.

Manipulative treatment without antidotal treatment for poison can-not affect a cure.

We must carefully distinguish between two classes of cases;- (1) Those in which drug or poison has never been introduced into the system. Here poisons represent auto-intoxication and in this case body prepares or can prepare its own antidote for all self created poisons. (2) Those cases in which drug or poison have been introduced into the system from without, in this case poisons accumulate and while ~~the~~ intoxication continues organs of the body can-not produce and antidote for themselves for these foreign poisons. Result is accumulation of the poisons and accumulative action of the poisons both of which must be antidoted.

Question is asked, does not secretory process work our these poisons and will not circulation eliminate these poisons if stimulated? Answer is yes, It will eliminate poisons on to surface of the body or tissues and within the circulation field but not on poisons that are inbedded in the cells or bound up in the bioplasm. Every reconstructed bioplast is rebuilt on the nutritive basis and under test it reacts and it bahves as if it were poison.

In a circular letter sent out by a New York firm in November, 1906, it says, "The greatest advantage of iodpin is that it does not cause iodism but permeates the body, it is secreted slowly so slowly that if a patient had been under the treatment iodine has been found in the urine of siphilitic cases along time after". That is there is no iodism, no surface expression of the iodine poison, but appears as permeation of the iodism.

In one case iodine was liberated from the bioplasm after ten years had passed since its use. System was freed from it only after a measure was taken to restore it by antidotal treatment. In a similar way we can ~~sikk~~ eliminate arsenic, mercury, opium, cocaine, etc., many years after these have ceased to be in use.

Parke Davis and Co. in a letter on iodolvin speaking physiologically of its action says, "Less quantity is sufficient because iodolvin

secretions of the mouth at least a year after its use had ceased.

Dr. J. T. Wright, member of the Board of Health, N.C., says, "I believe it has been conceded that morphine has an accumulative effect producing a general toxemia the morphine poisoning accumulated with abcess. Cases of suppressed menstruation, lactation, etc., in which there is no structural change the cause is traced to toxemia".

We differ from him because we claim perverted nutritive conditions, structural, structural applying to cells of the tissue in which accumulation takes place, demonstrated by examination of the urine, secretions and blood.

In the treatment of these conditions of poisoning, (1) Give treatment to arouse glandular activity and secretion and excretion all over the system, do not use medicine but by the use of hot baths, vapor, frictional rubs of the skin to establish elimination. Treatment to the liver and intestines given as indicated to establish rhythmic and intestinal parastalsis. There may be no lesions corresponding with these conditions but we have found secondary lesions in area corresponding with rectum, secondary to paralysis of the rectum, in area corresponding with intestines secondary to the inactivity of the intestines, etc.

(2) Give antidotal treatment corresponding with poison. Regular treatment that has been given in this field by regular doctors is to use deliri-faciants, such as daturin, double chloride of gold, hyosine, etc. Our method is to use antidote for poisons in the system itself on the dynamic basis so as to liberate and free the system from the poisons and poisonous action and then compel its elimination. Demonstration of this point rests upon tests, e.g., we have injected a guinea pig with the virus of anthrax and it died in a short time. Injected another guinea pig with anthrax virus and give it a dynamic equivalent of antrocinine and this prevented the anthrax from killing the guinea pig. Here we have illustration of the fact that potential equivalent of the toxin or poison will

antidote action of the poisons themselves within the system.

The Medical Advance, Jan. 1909, makes the following report, the operator of the laboratory, while making an injection was wounded by a sharp needle in his thumb, inflammatory symptoms and blood poisoning set in. Several months passed in which all remedies were used but nothing availed until antrocinine was used. (3) Diet patient lightly giving no diet that will produce fermentation. In addition to this limited amount of water until there are symptoms of elimination, such as free flowing of the saliva, urine, and fecal, then flush system with water and keep up this until urine and feces show elimination.

(4) Patient must have carefully selected exercise plenty of hot and cold baths, especially in the mornings, rubbing. With the increase of appetite add more food to the diet determined by the condition of the patient. Always avoid the use of medicines, alcohol, stimulants, excessively rich foods and pastry.

Technique of antidotal treatment.

Nothing can be given only an outline because it is practical and not theoretical.

When poisons are on the surface of the body the circulation will remove them by physiological action. Where poisons are passively accumulated in the system; assimilated into the tissues representing accumulative effects of crude poisons, adulterated foods, auto-intoxications, deeper effects must be produced to liberate poisons from the tissues. In this field of antidotal treatment we lay down three propositions, -(a) high potency of substances antidotes and throws down from bioplasmic field for elimination and also destroys effects of crude substance or remedies. (b) high potency of the combination of crude remedies exactly on the same basis as compound prescription antidotes the parts of the prescription. This applies equally of the patent medicines etc., (c) high potency of the nosode (toxin of diseases) in connection with intoxication products and diseased toxins, antidotes, effects and accumulative circulation

effects in the system preparing for and producing the elimination of effects and products of the intoxication and diseased toxins.

(6) These points have been demonstrated by their application to animals and human subject in connection with conditions here specified, such as mercurial compound used in dentistry as well as mercury compounds used in disease, siphilis, gonorrrhea and mercurial suppression of these, alcoholism, cocainism, iodism. We have seen typical cases of Bright's disease, diabetes, secondary to amalgam fillings of the teeth.

Diseases of the tongue and mouth are tracable to platinum, mercury and copper in teeth. Vaccination resulting in vaccinosis. Results of this is frequent eruption on the scalp, forehead and these are effects of the poisoning taking place within by accumulative action. Also in some cases of appendicitis, the inflamatory conditions being produced by embalmed beef, intestinal obstruction, hepitis, liver pains, and tenderness, suspended stomach function, distention of the stomach pains in cartilages of the ribs radiating along spine. Borasic acid, salicylic acid, etc, by the use of the high potency of these substances have cleared up drug conditions such as obstructed force of visceromotion, vasomotion and preventing nutrition and assimilation. (7) During this treatment we must be careful to restrict diet of the patient.

Diet must serviceable is; - bread, toasted destroys the yeast germs, eggs, poached in salt water, rice, ala Japan, baked potatoes and apples; oranges, plenty of fresh fruit minus the acid fruit, nuts and vegetables. Free use of water. Some have asked cannot these conditions be cured without antidotal treatment. Uncomplicated cases can be cured without the ~~rx~~ aid. Foreign toxicity has obstructive lesions and these must be corrected in the case where they are present. How do we know toxicity exists and that it is not auto-intoxication, history of the case, presence of objective and subjective symptoms. (3) Examination of the blood and other fluids.

If the toxic elements are present such removal is essential because they keep cure from patient, wears out life forces and causes death.

PHYSIOLOGICAL NEUROLOGY

NEUROLOGY--It represents as a separate science the sum of our knowledge regarding the nervous system, both in the normal and abnormal state. It is called Physiological Neurology to distinguish it from Pathological Neurology, in which is discussed morbid conditions of the nervous system; both from the standpoint of structure and function.

The subject of neurology is new from a scientific standpoint. The founder was Vesalius, an anatomist.

FLECHSIG-- He traced out the pathways of the different tracts in the nervous system.

HATZIG-- He wrote up the brain areas.

VICTOR HORSLEY-- Is the most noted English writer. He contributes largely to the Lancet, and has presented fine articles on the relation between the pneumogastric nerves and the sympathetic system. A pneumogastric nerve has an inhibitory function when it combines with the sympathetic. Horsley's work on the brain is not surpassed by any writers on this topic.

WILLIS-- He studied out the cerebral circulation, known as the "Circle of Willis". He developed nerve portion of the brain.

FALLOPIO--Was another writer on this subject. In modern times we have had a number of writers. It has been better developed in Germany.

STILLING and MYHRT--Have contributed largely to the science of neurology. They have developed neurology along the nerves and nerve fibers, tracing out the paths of distribution of the nerves.

WALLER- His investigations were to trace out degeneration processes in the nervous system. This is known as the Wallerian Degeneration. He experimented in dividing the nerves and nerve tracts, and evolved this LAW. That the axis cylinder which is the central part of nerve fibre remains intact only so long as it is in direct communication with the parent cell. A nerve fibre always degenerates away from the cell of origin of its impulses. Hence it degenerates in the same direction as its impulses would pass.

Motor		Pressure
Nerve Cell		
Efferent		Degenerates at outer part of body.
Pressure		
	Sensory	Nerve Cell
	Afferent	

CENTRAL OR CEREBRO SPINAL SYSTEM

1. The ganglion cell and the nerve.
 - (a) The fundamental unit of the nervous system.
 - (b) The embryological development as the foundation of the structure of function of the nervous system.
 - (c) Structure and function of brain, spinal cord, medulla, cerebellum, cranial nerves.
 - (d) The structure and function of the different ganglia.
 - (e) Spinal cord and its ganglia and the peripheral nerves.
 - (f) The circulation of blood of the central nervous system, in relation to nerve functions.
- (1) (2) The function of the cell as the central organ in the nervous system and the function of nerve as to its peripheral medium.
- (1) (3) Combinations of the cells in the formation of ganglionic organic centers, and relation of these centers to functional processes.

THE SYMPATHETIC NERVOUS SYSTEM.

2. (1) Embryonic origin of the sympathetic nervous system.
- 2 (2) Development of sympathetic nervous system as an independent system.
- 2 (3) The establishment of co-relation between the central nervous system and the sympathetic.

ERDMON- Author of "The Comparative Anatomy of the Nervous System."

BYRON ROBISON- Abdominal Brain.

Neuroglia is found only in Cen. Nerv. Sys. with one exception. That is in the optic nerve. The real nervous tissue consisting of cells and fibres fills up the interspace of this net work.

The function of neuroglia is to support, and perhaps to nourish. When nervous tissue cells degenerate neuroglia takes its place. In all disturbances of the brain neuroglia develops. The nerve cell in the insane is the spider cell. The pathology which leads to insanity is a trophic pathology. When nerve tissue predominates we have healthy functions. The nerve cells are of two varieties; 1st, the small cell spherical in shape with one or two processes; 2nd, Multipolar here the cells are of various shapes and many processes. Fibres of the cell originate in the

the substance of the cell. No matter how many processes a cell may have, it has but one fibre-called Neuraxon, neurites or axis cylinder. The other processes consist of protoplasmic processes which form a net work. The neuraxon passes directly into the nerve fibre. Other neuraxon terminates into a net work. Small branches from the neuraxon are ramifications. Hence, there are two origins of the nerve fibres.

1st. Direct--in which we find polarization of the cell.

2nd. From a net work of dendrites the ganglion cells send out two kinds of processes.

1. A fine process called neuraxon.
 2. A thicker process called dendrites. These aid in breaking into small branches wherever they terminate.
1. The neuraxon always divides up into filaments. The dendrite is a communicating dendrite-- a thickening process. The dendrite is formed later. They may communicate with other cells, or may form a net work. There are two kinds of nerve cells (a) those with short processes. (b) Those in which the cell is extended into a long process. Here the neuraxon gives off lateral branches, these giving off smaller ones until they form minute fibrillae. Of the second class, the first is most numerous. There are few neuraxons which pass out into the peripheral system. They terminate closely to cell of origin. The dendrite processes also break up into small branches. They never form peripheral nerve. The brain is the field for dendrites. Their functional activity to second theory is to increase the surface of the ganglion cell and to establish communication between themselves and other cells. These dendrites processes may establish communication between cells and fibres. In some cases the neuraxon and dendrites fibres start from the same processes. We have ganglion cells, neuraxon, dendrites and sets of small branches. All these are called Neurons. The neuron is the unit of the nervous system.
- (1) Originally each neuron is complete in itself.
 - (2) And isolated from every other, and reverting to its original condition. The communication is established between the neurons by means of small branches. These communicating branches are called associating branches or filaments.

Large plexuses have ganglionic cells. Neurons

terminate in fibrills. The function of dendrite is subject to considerable discussion among neurologists. Histology proves that no dendrites pass out into the peripheral nervous system. Dendrites must have their function inside the nervous system. Their function is to increase the surface of the ganglion cells (cell proper neurons) This will enable the cells to communicate fully with one another through the dendrite without using the neuraxon. The function of dendrite will be to establish inter-relation among ganglion cells. Neuroxon is the administrative portion - dendrites carries out the work. This is proved by the fact that each neuraxon is brought into contact with a number of dendritic processes. In some cases the dendrites and the neuraxon branch off from the same processes.

THE TRACTS OF THE NERVOUS SYSTEM.

1. A tract is the combination of these separate parts of the nervous system. Of these tracts there are various orders. In the anterior horn of the spinal cord we find cells which send out neuraxons - each cell one neuraxon. The neuraxon passing into and ending in small plates, formed by minutely separated twigs in the muscle. That part of the nerve extending from the peripheral plate in the muscle to the first ending in the central nervous system is called a tract of the first order. A tract of the first order consists of the muscle ending of a motor nerve and the anterior horn cell with all the nerve fibres that lies between these two points. In connection with the numerous dendrites sent out by the anterior horns, we find many delicate filaments which are co-related with larger cells in the brain in cortex.
 2. Therefore a tract of the second order represents brain cell nerve fibres and branch dendrites from the anterior horn cell.
 3. Following this - neuraxons from other central cells surround the dendrites of the second order and these form a third order, which includes central cells and neuraxons. In the body of the ganglion cells we find granular threads, spindle shaped, some regular and some irregular. One characteristic of this part of the cell is that it changes its color in connection with staining process. This means that the staining is due to injury or to poison. This is the part of the nerve that is susceptible to injury or poison.
- If the nucleus of this part of the cell is uninjured the restoration of this part of the cell

is possible. A nerve lesion would be a poisoning of the nerve cell. The stainable granules always diminish. The fatigued cells also diminish - become more translucent. Vacuolated (The general volume is decreased, but not the size. The number of vacuoles are reduced. In the unstained structure of the cell we find delicate fibrilla in the form of minute threads passing through the structures of the cell as its stroma or frame-work. These ganglion cells when gathered in groups form a ganglion of which there are two types, - the central and peripheral. The tendency in higher forms of life is to group in larger ganglions.

1. These separate ganglions function independently originally.
2. The brain and spine represent a series of such independent ganglions different stages of development being found in the series.
3. Every cell and every fibre can through terminal twigs come into connection with many other cells and fibres of other tissue.
4. There are certain classes of these cells which have no direct relation with the outside tissue. From one central system uniting other ganglion centers these classes are called association cells, all of the second order.

CENTRAL NERVOUS SYSTEM

1. Ganglion cell and the nerve. We can understand the central nervous system only if we understand its development. The development of the nervous system is the foundation of its functioning in the embryo mass.

There is a sub-division of the embryonic mass into three layers, - epiblast, mesoblast hypoblast. The nervous system is developed from epoblast; this is the larger layer in the vertebrate and in invertebrate forms of life. This epiblast first is developed, or rather indented, by a deep, long groove. This groove gradually deepens until it forms a $3/4$ inch tube.

2. Another portion of this epiblast that is on either side of this groove is found formed into ganglionic masses, which later represent the spinal and cranial ganglion. The tube is the medullary plate and represents the central nervous system in its origin into the spine. In this plate we find different types of cells. (a) Epithelial cells, also the germ cells. These cells are found, protoplasmic nerves, which later become nucleated; the cells when they become bioplasmic, become the

ganglion cells of the central nervous system; out of which grow later axis - cylinders in the form of processes projecting from the cells. The epithelial cells remain as the boundary of the central canal, sending out processes that end just below the pia-mater. At this point we find hair-like processes, representing cilia, these cilia later on forming the enlargements; these epithelial cells by cell division divide and recede from the central canal towards the surface, keeping up their fibre connections. The fibres form a network. This net work is the plexus; these are the cells which form the frame work of the nervous system - by some called spong-plast. (b) THE NERVE TISSUE CELL

This is represented by the original impacted cell called neuroblast. They are the primitive epiblastic cells. All the central nervous system may be divided into two portions, first, connective tissue frame work, second, nerve tissue, epithelial cells; connective tissue represents the blood vessels, the sheath of the nerves and the neuroglia substance. This substance represents a large number of minute fibrils that run all the way through the central nervous system, in the net work formed at points of intersection.

Neuroglia are fine plates representing neuroglia substance. These differ in different parts of the nervous system. They are thick and dense in the brain - less dense in the spine. Neuroglia is nerve frame work, and it is found only in the central nervous system. One exception - optic nerve. Real nerve tissue consisting of cell and fibres fills up the interspaces in this net work.

GANGLION CELLS

The basis of the entire nervous system is found in the ganglion cells. These ganglion cells establish inter-relation with each other, as the basis of all nervous activity. The motor nerve has no function at all, if it is separated from the cell. The sensory fibre may have a partial function if separated from the primary cell on the surface, but if the cell in which it terminates in the gray matter of the brain is destroyed, there is a complete loss of function called sensorium - (common center of sensation.) The sensorium in the gray matter represents a sort of leafage.

The fibre relation to the cell is one of function. The fibre function to the cell is one of function. The fibre function being determined by the cell function - a sort of telegraphic system.

The structural relation between the cell and fibre is one of nutritive continuity. The basis of all the function of the cell in the system is reflex action. In the developed nervous system a reflex action implies first, a sensory fibre with its terminal. The terminal of sensory fibre is three fold; 1st, a cell, 2nd, a bulb, 3rd, corpuscle.

1. (1) A cell is the modified gray cell found on the surface of the body.

1. (2) A bulb is a modified gray cell, modified by union with epithelium or muscle tissue.

1. (3) The corpuscle is a modified cell, forming a distinctive terminal, like the rods of corti (in the internal ear); (rods and cones of the eye) These are also corpuscles (Pacchionian corpuscles in brain.)

2nd; The cell proper. A motor cell with its terminals in plate form, that is to say, that while the sensory terminates in three ways, the motor nerve terminates in one way, except in the liver- in spiral form.

The ganglion cell is center of the reflex action. It has the power of receiving the stimulus; also the power of retaining the stimuli and storing it up for future use. The gray cell (at least of higher order) has also the power of modifying stimulation. Two stored up stimuli may be combined, in stored up stimuli it may be divided, part only being used, the rest being left in storage.

The power of modification goes so far as to amount almost to an original nerve stimuli. The basis of this is the process of reconstruction of a sensory path establishing connection with nerve cells. The center become constant in its action and yet certain associations are free because the nerve cell retains a degree of independence. The central nervous system contains.

1st; Certain parts which are congenital
(From birth)

2nd; Certain parts derive their origin and importance from the individual -- this represents the free part. The congenital mechanism is found in all parts. (a) in the vegetative function of sympathetic system, medulla and spinal cord. (b) in the cerebellum this is great organ of coordination. (c) The free part of the nervous system which belongs to each individual is his characteristic own, is in the cerebellar cortex and ramification.

The motor phenomenon resulting from irritation coming from the sensory side lie at the founda-

tion of the complex reflexes. In this case there are different groups of cells called movement complexes we find;

1st; The stimulation of cells and groups of cells with resultant movement of muscles or activity.

2nd; The suspension or cessation of movement, where inhibition is established from the central nervous system. The motor nerves proper in all vertebrates, arise from the large ganglion cells that send their neuraxons to the muscles, and these divide up into small fibrilla, one nerve fibrilla to each muscle fibre (Dendronea) Minute branches from neuraxons. Sensory nerves originate in the skin or superficial tissue and pass to terminate in the central organs by free endings (dendrites). All the motor fibres are axis- neuraxons - cylinders, the cells or origin lying in the ventral portion of the spinal canal. Each motor cell send out its fibres towards the surface, the fibrille approximating to each other to form the central group, sometimes called anterior nerve roots. The sensory fibres originate from ganglion which lie near the cord, called posterior ganglion, extra spinal ganglion, spinal peripheral ganglion. They do not originate in the acri, hence they are distinct peripheral nerves.

From the spinal and cranial nerves fibres pass out in two directions; 1st, One set enters in to the central system and the second set pass into the peripheral as the distinctive sensory nerve. In all vertebrates the cells of origin of the motor nerve.

1st. All over the body we find ganglion cells, where neuraxons end in the unstriped muscle of blood vessels, into the heart and the viscera. There are the characteristic sympathetic and motor cells, because on these cells depend the inherent contractions of the unstriped muscle (Here we have rythm of the heart). In the higher animal and human individual subject all the striped muscles get their supply direct from the central nervous system, only the unstriped muscle getting its nerve supply from the sympathetic system. In the lower animal some of the striped muscles receive their nerve supply from ganglion cells outside the central nervous system. The sensory nerves in the higher vertebrate, grow from cells in the extra spinal ganglion, splitting up into fibres and terminating - 1. freely in epithelium, or 2. in some end organ of epithelium, or endothelium structures. (Lining vascular or serous)

cavities)

According to modern histology all the sensory nerves originate from cells originating in the integument (from epiblast). These cells that lie in the integument divide and move inward, leaving behind as they move in, long, thin, branching fibers, which terminate in the skin. In the vertebrates the branching fibres grow inward till they reach the spinal ganglion and terminate in them. The terminals are different from those in the sensory organs, because the sense organs are nervous and epithelium. The terminals in the skin are called integument neurons. The sensory nerves in their origin are located on every superficial surface in the skin and in all tissues and organs. In the kidneys, lungs and liver, we find sensory nerves. All surface of the body, internal as well as external surface of organs, as well as tissues, have the sensory terminals. Why do we not find so many sensory endings? The great number of reflexes necessary to act

of the body depends on the existence of these. The regulation of blood secretions, circulation and tension of muscles depends on these reflexes. The result is that every movement of the body depends on the intactness of the sensory apparatus, every type of disease originating on the sensory side of the apparatus.

Sensory side is first developed among the higher animals. The central nervous system is concentrated to form one united system and within this system we find, first, a longitudinal axis (spinal cord) or cord into which sensory fibres pass, and from which motor fibres come out, including -

(a) These parts of the central nervous system which receive or send out a number of large nerve trunks, the thickened parts within the axis forming the cervical and lumbar enlargement; these two enlargements are sometimes spoken of as subordinate brains and their function is, to regulate the upper and lower extremities. We have said that the arm and limbs grow out of the body in a budding way, or as appendages.

(b) The medulla is really a third enlargement cranial ward. From this enlargement arise the nerves from the arches and clefts representing the throat, head, neck and at least the upper thorax. Consequently we find three large masses of nerve tissue in the axis of the spinal cord. These correspond with the three vesicles of the brain.

(c) Another enlargement lies anteriorly to the medulla in the region of the optic nerve. This represents the optic lobes of the brain.

(d) At the most extreme anterior portion of the nervous system there is a large enlargement, representing a kind of terminal wall. This is the point of origin of the olfactory nerves. It is a fact that the olfactory is the first sense.

(e) In the spinal cord the original layers of nerve cells are connected together by means of inter-communicating fibres, which also represents regional enlargement.

(f) Posterior to the medulla lies the fully developed cerebrum; in front of, and anterior to the deep origin of the optic nerves, the mid brain crossing tracts both from before and behind anterior to the hind brain, dorsal to the olfactory lobes, lies the corpus striatum. That portion of the brain ganglion which originally gave origin to the brain mantle or covering (cerebrum). Corpus is point of origin of the cerebrum - (foliage of the brain). This is the last to be developed, **TERMINAL NERVE STRUCTURE**; This means that all of the structures that lie inside of the cranium are additions to the spinal cord.

1st; All of the brain substance (ganglionic cells) is developed from a point in the spine posterior to, and beneath the level of the medulla. It is not an outgrowth of the medulla or spine.

End. The brain substance, including all of its lobes and ganglia, and the mantle, are an addition to the spinal cord, for the purpose of getting the ultimate development of the body through the nervous system.

3rd; This means that the spinal cord is the nervous system, without which vertebras existence would be impossible. There are some forms of animal life that have no brains -- as the amphioxys. It has a spinal cord only and yet has some intelligence. The brain is the higher life development. The cord is the lower development. The root origin of disease is in the spinal cord.

The starting point of the nervous system is a plate formed by indentation in the outer part of the epiblastic layer. This plate, as the body or trunk develops, becomes curled in the formation of a semi-groove. The edges of the plate curl outward and this ultimately becomes the medullary canal which, when enclosed, represents the spinal canal. This canal is prolonged anteriorly in the formation of the brain. When this canal grows to its anterior limit, it is closed by a wall representing the terminus of the fore brain, the wall being called

the terminal lamina. The original medullary tube is closed by a plate which forms a ridge, or inverted seam, along the entire length of the axis. In vertebrates this plate arises out of the part of the fore-brain lying dorsally and laterally to the terminal lamina. As soon as the nervous system goes up as far as it can, it begins to grow backward. The Prosencephalon is located anteriorly and dorsally, and is later divided into two hemispheres. In the higher animals the hemispheres grow very quickly, the growth taking place posterior to the brain vesicle, the complete growth covering over the vesicles and forming the mantle or cerebral cortex. The cavities of the three brain vesicles are distinct, but communicate with each other; in the formation of the ventricles of the brain from the original fore-brain, there is developed the Prosencephalon, or cerebrum, divided into two hemispheres. From the other part of the original fore-brain, there is developed the Thalamencephalon (Inter). In all mammals the wall of the hemispheres begin to grow thicker at this stage, but the growth is unequal some parts thick, some thinner. At the base there is located the original olfactory lobe in the form of thick walled masses. Posterior to this, and at the base of the corpus striata, these olfactory lobes are developed. These lobes are separated by a cleft from the dorsal segment, representing the ntile. At this point the walls become very much thicker. This is the dividing line between the basal ganglion. In all the vertebrates the basal ganglion are represented by the olfactory lobes and the corpus striata. In the higher animals the cortex of the cerebrum is developed as a complete covering. In the brain of the fishes the cortex is simply a thin epithelial wall, and never thickens. The hemispheres represent a portion of the brain most highly developed in the higher animals. The roof of the Thalamencephalon represents the cavity of the third ventricle. This cavity remaining in all forms of life as a simple epithelial layer, at the junction of the Prosencephalon and the Thalamencephalon, with the cortex and the vesicle, there is an epithelial plate which gradually developed downward as a vascular membrane, representing the choroid plexus. The inner border of the hemisphere is continuous with this plexus; that inner plate of the cerebral cortex with the choroid plexus is the membrane that secretes the cerebro spinal fluid. The place where the walls of the hemisphere pass into this epithelial plate is

called the margin of the hemispheres. This is marked in the developed brain by a vasculous or bundle of white fibres named the fornix. Where the cerebrum is fully developed, and during the four months of foetal life, the mantle has grown out posteriorly and bend forward ventrically in connection with the frontal, occipital and parietal lobes of the hemispheres. Later the development downward, below the sylvian fissure gives us the temporal lobe. The hemisphere still maintains the hollow cavities conforming to the general form of cerebral development. In the anterior part of the brain, the corpus callosum is developed dorsal to the fornix. The commissural fibres which make up to corpus callosum determine the surface, because they form definite angles.

In the fornix all of the fibres practically are at acute angles to the corpus callosum, and the portion that lies between the fornix and the corpus callosum represents a dividing wall and is called the septum-lucidum (vascular). In the base of the cerebrum is a thickening of the walls that project into the ventricles, this is the origin of the corpus-striatum from which the nerve fibres arise, AND THEY PASS THROUGH THIS from the cerebrum. These fibres passing through the corpora-striata are of two types; 1st, an outer section represented by the lenticular nucleus, second, an inner section the caudate nucleus. The fibres lying between these two represent the internal capsule. The corpus-striatum extends the whole length of the cerebral base. Posterior it is very narrow and very short in connection with the lenticular nucleus. Anteriorly it is very short, projecting into the ventricle in connection with caudate nucleus. This is the neurology foundation of the brain.

MEDULLA

At the cephalic end of the spinal cord and cord passes into a bulbar structure representing the terminus of the cord proper. The posterior columns of the cord, as they pass upward, diverge from each other at a point representing the original sprouting point of the upward development of the brain out of the cord, and in connection with the original vesicle. At this point the commissure dorsalis terminates. The grey matter surrounding this point represents the original brain-spine function. The dorsal closure of the central canal of the nervous system takes place by the growth of a thin membrane, which ultimately forms the spinal crest passing anteriorly from the front of divergence of the

posterior column. This membranous roof becomes wider as the posterior column continues to diverge. This enlarged cavity formed by the membrane enclosing the divergence between the posterior column, forms later the fourth ventricle. The membranous structure of the roof of this cavity being called choroid plate, or tela choroidea. Posteriorly this membrane merges into the choroid plexus and anteriorly it merges into the covering of the cerebellum (formation-cerebellar) (Original development). This makes the cross-section of the nervous system at the medulla greater than at any other point of the nervous system. This is due; 1st, to the appearance of the reticular structure called the formation reticularis. This represents an association system of short fibres that meet together at the point of junction between the spinal cord and the Thalamus cephalon. 2nd, the medulla contains at this level a large number of nerve centers corresponding with all the vital processes and these centers lie on either side the median line. Most of them being duplicate centers. The three greatest centers that lie here are as follows;

1st; Cardiac inhibitory center; pneumogastric and depressor nerve center.

2nd. Respiratory center two parts on either side of median line.

3rd. Vaso Motor centers, tonic or constrictor centers for entire vaso motor system.

At this level in connection with the floor of the 4th ventricle we have the origin of the three largest cranial nerves;

1st; Includes Pneumogastric (sensory)
 Spinal accessory (motor)
 Hypo-Glossal
 Glossopharyngeal

2nd; Auditory nerve

3rd; Tri-facial, or 5th nerve.

At this point where these three great trunks originate, we find three large nucleated bodies representing the enlargement of the medulla into the substance that lies in the floor of the fourth ventricle. The Ventricle grows upward.

It is at this point that we find the cerebral and cerebellar cones, established in connection with these tracts (tracti) that pass upward to and downward from the brain. These tracts represent systems of fibres sometimes divided into two—the crossed and the uncrossed tracts. In the lower forms of life, such as the amphioxys, the grey matter lies entirely anterior to this part, the formation of the grey matter taking place in neuroblasts. The four ventricles in these animals

is the central point on either side of which grey matter accumulates, the vagus trunk originates to supply the sensory fibres.

The increase of the posterior grey matter represents the point of entrance of the vagus trunk. This is the lowest level of grey matter, representing the cranial nerves. Above this the auditory nerve enters into the grey matter by one of its roots.

3 { Med
 { Cereb
 { Brain proper

The anterior horns of the spinal cord are found in connection with the motor fibres of the facial and tri-facial nerves. The most anterior part of the cervical nerves that supply the same region is innervated by the 12th cranial nerve. (By The 12 cr. nerv. originates 1st, the same as an anterior root in the spinal cord. The dorsal or posterior column as they project upward in the higher forms of life, become denser and broaden, assuming a net like form. The net work represents the grey matter. On this net work there rests a crescent shaped nucleus. This nucleus is the point of beginning of a tubular structure that extends upward beneath the cerebellum. This is the dividing line between the upper part of the spinal cord and medulla. This nucleus receives along its course very delicate fibres from the surrounding mass of fibres that pass up and down following this tract. Following this tract upward we can trace it to the point where the trigeminal nerve from the gasserian ganglion into the brain substance proper, a great bundle of fibres from the fifth cranial nerve passes from the ganglion down into the cord in connection with the nucleus. This is the fibre bundle, which is called the spinal root.

The root of the nucleus at the end of the dorsal horn is the terminal nucleus. This is called sub-stantia gelatinosa Rolando. On the median side of this nucleus there lie fibre bundles that come from the posterior column, and these fibre bundles enclose grey masses located at a point where posterior columns lie in the cord. At this point it is called the nucleus of the posterior column. The principal difference between this section and the tri-facial spinal cord section, is that in the space between the anterior and posterior horns there lie a large number of commissural cells, the neuraxons which pass in small bundles through the medulla into the lower and middle brain (Thal Mezen Cephelon) This is the point where we get a great system of associate fibres that connect the levels of the cranial

sections of the central nervous system to anterior end of spinal cord. At this same point we find the commissural cells from which originates all association fibres, also the tracts that rise from these commissural cells. The fibres herein the medulla are both crossed and uncrossed, similar to what we find in a spinal cord. This makes the ventral portion of the spinal cord commissure at this point, quite large from this point up to the corpora quad. We trace out the decussation fibres and association fibres also originate here, representing the tractus Brevis. These fibres connect the cord with the cerebellum (Mesen Ceph. & Thal. Ceph. tracti tecto spinalis). Representing the crossed tracts from these terminal nuclei into which the sensory fibres from the spinal cord pass, their tracts represent what is called secondary tract from the nuclei to the roof of the Mesen Cephalon within the medulla proper. These are found by a large bundle of fibres from the terminal nuclei of the cranial nerves. This forms what is called the fillet. It is formed therefore from the nuclei of the spinal and cranial nerves. On opposite sides the fillet accompanies a large part of the ventral and lateral portions of the medulla in their development from the nuclei of these cranial nerves, located in the medulla and their fillet connection we infer that low down in the animal kingdom there is no brain proper. This part of the medulla represents the brain and the brain proper depends for its development on the kind of body which the animal possesses. As example, in the fish there is a very simple brain, consisting of a thin membranous layer, but we find larger terminals of the optic nerve a larger nuclei in the medulla than in the human subject, hence in the lower animals the nuclei of the cranial nerves represents the only brain development that there is.

I, 2, 3, 4, 6 are true cranial nerves.

Vagus - 9, 10, 11, 12

8th with I branch of the 7th

5th with I branch of the 7th

(Medulla nerves.

(

The cranial nerves are divided into two groups, a posterior group, including the hypoglossal, spinal accessory, vagus and glossal pharyngeal. The anterior group represents the 5th and 8th cranial nerves.

The terminal nucleus of the cranial nerve in all animals is located in the same area of origin. The variation that is found in the cranial

nerve represents the way in which the roots leave the central nervous system, and the different nerves combining together and interlacing one another in such a way that they cannot be separated (This takes place in after development). There are variations in these in different subjects and nerves may follow different paths. The ventral commissure that begins in the medulla represents large ganglion cells in which we find origin of the motor nerves in the spinal cord. These motor cells develop downward from the medulla toward the sacrum and it consists of a series of nerve nucleoli on either side of the median line on the anterior portion of the cord, between the two series of nucleoli. The cells of the commissural cells from these anterior nucleoli origin. The hypo-glossal nerve, spinal accessory and the motor branches of the cranial nerve and all the anterior roots of the spinal cord that supply the skeletal muscles and the nerve roots which supply the viscera originate in the lateral portion of the medulla and cord. These lateral horn fibres are represented from the anterior horn fibres and leave the medulla as motor fibres of the spinal accessory. The vagus nerve- the most centrally located segment of the motor column- produces the facial nerve (7th) and the trigeminal origin. From the cells both in the medulla lateral and ventral division of the anterior segment. The posterior horns of the spinal cord continue upward through the medulla where they meet the vagus nucleus, also the glossal pharyngeal and auditory and trigeminal nuclei. After this these nuclei send out its branches into the descending tract. In addition to the nuclei of the cranial nerve in the medulla and association tracts and connecting other fibres as formed that enter the medulla as they pass from the spinal cord to the cerebellum embedded in nuclear cells of the medulla itself. This represents association fibres and also some special ganglionic masses, e.g. The Olivary bodies- superior one representing ganglion cells in connection with the auditory nerve and inferior in connection with cerebellum. Here we have co-ordination of auditory nerve with cerebellar function of equilibrium in the medulla. We therefore have two distinct fibre systems.

1st: Fibres from the nuclei of the posterior columns. These are the fibres in connection with the fillet tracts.

2nd. Fibres in lateral portions of medulla in connection with the cerebro spinal nerve fibres representing the root fibres of the tri-facial

nerve, The sensory fibres of the spinal cord, and what are sometimes called spinal bulb fibres have connection with tegmental fibres, crura fibres, 3rd; Nuclei of origin in medulla, 5, 8, 9, 10, 11, 12.

Spinal accessory is motor to liver and other organs
Vagus sensory nerve.

Restiform bodies is where the fibres of coordination are found.

CEREBELLUM

Dorsal to the medulla and united with the medulla by several tracts, we find the cerebellum. The great function of that is that of coordination and equilibrium. In this coordination and equilibrium the cerebellum is closely connected with the medulla. At least its anterior pyramidal portion. In the medulla proper we find the great central systems connecting all the different levels of the nervous system, and we also find in the medulla the subordinate centers which lie below the level of the brain proper. This makes the medulla and the cerebellum the two vital portions of the brain proper. In the lower vertebrates all that is anterior to the medulla can be removed without interfering with the vital forces. The spinal cord can also be removed without causing more than sensory and motor paralysis animal life is carried on by cranial.

The medulla and cerebellum cannot be removed in any grade of life without causing death. This means that the medulla and cerebellum are closely united together in the vital processes. The medulla represents the great center of the organic activity and the cerebellum the center of organic movements. The cerebellum is continuous posteriorly with the choroid plexus and anterior with a fine plate of developing nerve tissue represented by what anatomists call velum anticum. This is the thin plate that passes upward to the roof of the Mesencephalon. The cerebrum represents in development much greater variety and complexity than any other portion of the nervous system. The cerebellum therefore marks the nature of the development of the nature of the animal through the cerebellum. The simplest form of the cerebellum is found in the amphibia. That part of the cerebral roof that is directed towards the mid-brain is thickened into a narrow ridge that lies anteriorly in relation to the terminal of the fourth ventricle. In the swimming reptile the cerebellum is much larger and is developed upward under the

mid-brain by the dorsal outholding of the original plate of the cerebellum. We have a continuation of the cerebellum into the fourth ventricle. In the fishes the tracts of the spinal cord, the Thal Cephalon and the Mesen Cephalon pass into the cerebellar structure.

In the mammals there are also tracts uniting the cerebellum through the cerebrum and these last tracts grow out and up into connection with the cerebral hemispheres through the pons. The median segment of the cerebellum in the human subject consists of a worklike twisting representing the original twisting of the cerebellar plate found in the fishes. The lateral segments of the cerebellum are undeveloped outgrowths by outfolding processes from the median segment and immediately posterior to the original median segment of the cerebellum.. We find the roof of the medulla representing ganglionic masses of grey nuclear cells that give origin to the 5th and 8th cranial nerves. In this way the 5th and 8th cranial nerves, while they have their origin in the medulla, are so placed that they come in close contact with anterior portion of the cerebellum. The greatest development of the cerebellum is found in the swimming and flying animals, because these connect and establish with the labyrinthine nerves, 7th & 8th. These connections are necessary to establishing the equilibrium of swimming and flying. The cerebellum is therefore one of the original, essential and vital parts of the brain. The structure of it is similar in all grades of animal life. It is originally developed from a simple cell plate and all forms of the cerebellum being developed from or by the folding of the cerebellar plate. The objects of the folding being to increase the surface of the cerebellum. Hence the difference between the lower and the higher animals is the complexity of the foldings of the later. This complexity in the folds of the cerebellar plate implies the presence of a larger number of coordinating and equilibrating centers. In the reptile it is simply a thin plate lying across the level of the medulla in connection with the ventricle. The long axis of the brain, extending upward and forward. In this original cerebellum is an anterior and posterior aspect, the anterior being directed toward the mid brain and the midbrain represents the center of motion. These two different aspects of the cerebellum are entirely different in their structure.

The anterior portion of the cerebellum represents dendrites that come from the posterior

lamina, - posterior part consists of ganglion cells.

Just at the juncture between the anterior and posterior parts there is a layer of large cells that, later on, are given the specific name of Purkinje. The small cells posterior to these large cells are multipolar cells and represent the two ganglion cells. These multipolar cells send neuraxons to the external lamina. The fibres that pass into the cerebellum are medullated. Between the epithelial portion of the ventricle and the posterior lamina these represent a layer of afferent fibres sometimes called the medullary part of the cerebellum, representing the center of the cerebellum. It is into this region that fibre tracts pass from the midbrain (motor Area) and also from the optic thalamus. In the cerebellum all the fibres that enter terminate and then give origin to new fibres. After originating fibres have been co-ordinated in the ganglion cells (these fibres are dendrites) large cells, pear shaped, bulbar cells, posterior ganglion cells co-ordinating to receive impulses.

Function of cerebellum - co-ordination

" " crura of cerebellum - equilibrium.

As the cortex increases in size the cerebellum develops new fibres connections. The cerebellum being connected with the other parts of the brain through the peduncles. The connection between the cerebellum and the spinal cord is established by means of the inferior peduncles in which we find the tracts from the lateral columns originating from the sensory nerve roots. The direct fibres from the spine to the cerebellum pass up along the direct cerebellum tract and are associated with the restiform bodies as they pass to the cerebellum; associated with this tract we also find a bundle of nerve fibres passing from the auditory nucleus terminating in the lateral column of the cord.

The auditory nucleus itself lies at the point where the inferior cerebellum peduncles enter into the cerebellum, and at this point there also pass fibres belonging to the vagus trunk; towards the medulla there are two bundles of nerve fibres which form the apparatus of equilibrium.

1. First bundle represented by auditory nerve fibres. These fibres are connected with the vestibular of the auditory nerve and also with the olivary bodies.

2. The other fibre bundles represent sensory fibres from the tri-facial nerve together with sensory fibres from the posterior column of the spinal cord, representing muscular and cutaneous sensations.

This second bundle in the higher forms of

animal life represents the middle peduncle, and a large bundle of fibres passing through the pons to the cerebellum. There are dorsal decussations; in connection with these fibres bundles in the medulla, and fibres arising from the direct cerebellar tract, and the cerebral nuclei in the cerebellum. Therefore we find large bundles of continuous fibres from the spinal cord, the medulla and the pons; also short association bundles of fibres uniting together the two cerebral hemispheres, and also connecting in some way the cerebellum and the basal ganglion.

1. In the cerebellum, as a general organ, we find, first of all, a ganglion center into which nerve tracts enter from the brain, the medulla and spinal cord, and this connects closely the cerebellum with the cerebrum.

2. Into the cerebellum there also pass fibre bundles from some of the sensory cranial nerves, principally the 5th and 8th. All muscular skin fibres.

3. Within the cerebellum itself, there are a large number of cell connections and these cell connections are established in two ways. (a) By cell processes or neuraxons, (b) By cell contact, where the close connection of cell with cell forms a basis of the co-ordination of movement and the maintenance of muscle tone. Note (b) Represents the only portion of the nervous system connected by contact as all the other places are connected by means of fibres and that is probably the reason for the large Purkinje cells.

4. Through the cerebellum we find established association connections between the higher and lower levels of the nervous system. Instead of there being a simple tract passing through the cerebellum, there are many tracts, and every one of these tracts have a connection either with the medulla or the mid-brain - motion. The cerebellum really lies between the mid brain on the one side and the medulla and spine on the other.

SPINAL CORD

Spinal cord belongs properly to the cerebro spinal, or the central nervous system. The spinal cord extends from the lower part of the medulla, below the decussation of the pyramids and at the level of the foramen magnum, to the level of the upper border of the second lumbar vertebra. The length of the spinal cord is generally fifteen to 18 inches, and its average weight 1 1/2 ounces in

the normal cord. It is a flattened, cylinder wider in the transverse direction. The spinal cord consists of white and grey matter and there are two marked enlargements in the cord one in the cervical and one in the lumbar. The cervical extends from the third cerv to the 2nd dorsal. The greatest transverse diameter (lateral) is at the 6th cervical. The lumbar enlargement is below the 9th dorsal to the 1st lumbar and the largest diameter ant post is at the 13th dorsal. These enlargements are found in connection with the nerve supply to upper and lower extremities, indicating that these enlargements form the spinal center for the local movements - locomotion.

The co-ordination between the cerebellum and the mid brain is on a reflex basis; Cerebrum represents conscious life; cerebellum and medulla represents sub conscious life. Medulla connects with all the brain.

Neuroglia consists of a transparent homogenous substance forming a net work of cells and fibres. The cells appear in stellate form, these cells being the center of structural development. This neuroglia represents the epithelial part of the original epiblastic layer substance, and it forms first the ground substance, e.g. stroma; the (1) foundation tissue of an organ. Stroma in the nuclear substance in which the nerve fibre cells and the blood vessels are embedded. The two glands cervical and coccygeal supply the blood.

2. An accumulation of neuroglia substance found distinctively in three fields (a) On the outer surface of the spinal cord, first beneath pia mater, (b) around the central canal of the spinal cord to receive the cerebro spinal fluid (nutritive fluid) (c) in the posterior part of the posterior horn, forming the substantia gelatinosa (found in posterior horn of the cord around the capit cornu) sometimes called the gelatine substance of Rolando. The grey matter that is found in this location consists of two distinct types (a) gelatine substance of Rolando, representing the neuroglia cells as the medium of nutrition and (b) central pearly substance, representing in some way an absorbent function.

In morbid anatomy the neuroglia increases itself. The commissure medularis represents the terminal portion of the spinal cord as a structure. This com. Medularis passing into and terminating in the filum terminale. This spinal tract is a continuation of pia-mater structure extending down to the base of the cocyx, where it

is attached to the periosteum of the coccyx (Do not forget this.) The function of the medularis is supposed to be that of a sack in relation to the cerebro spinal fluid for the purpose of distributing the fluid to the different nerve fibres of the cauda equina. The filum terminale is a membranous tissue structure continuous with the pia mater and periosteum, therefore associated with the blood and lymph field. The blood represented by the pia-mater and the lymph by the periosteum.

The spinal cord has three membranes, same as in the brain-- duramater, arachnoid and pia-mater. The dura of the cord differs from that in the brain, first, it does not form the internal periosteum of the bodies of the vertebra; second, it does not adhere to walls of bones in spinal canal; third, does not contain any sinuses, fourth, it does not send out any infolded portions into the fissures of the cord. It is like the dura of the brain, by sending out tubular prolongations over the nerve fibres, and it is separated from the osseous wall of the spinal cord by fat, a loose layer of areolar tissue and by the anterior and posterior plexuses of the veins; the fat and areolar tissue prevents the motion and locomotion from irritating the cord by contact with or pressure from the osseous canal. The anterior and posterior vein plexuses take the place of the sinuses in the brain for venous drainage. In other words, it is a provision of nature to prevent congestion. (Do not let the patient line on the side.) The Duramater is attached at the upper end to foramen magnum and to the axis and three cervical vertebrae; below it is attached to posterior surface of bone and coccyx. A membranous structure attaches to the three upper cervical vertebra (Strongest point of treatment for spinal meningitis is at the third cervical.) The sub-dural space lies between the duramater and the arachnoid and in this space we find a small part of the circulation of the cerebro spinal fluid for lubrication of the dura and arachnoid to prevent compression.

Pott's disease is curable if the periosteum is not destroyed. The arachnoid membrane is more delicate structure than the dura mater and must more delicate in the cord than in the brain. It resembles the arachnoid of the brain in sending out tubular elongations over the nerves. The arachnoid extends from the 1st cerv. to the 2nd, or 3rd sacral vert.

Structurally it represents a long sack. The space between the arachnoid and the pia-mater

called the sub-arachnoid space, being the channel along which the spinal fluid circulates as it passes through the cord. The quantity of the cer. spi. fluid found in the cord is about two ounces. The great function of the arachnoid is probably to act as a medium for the cer. spi. fluid to keep a lubricated field continuously between the dura-mater and the pia mater. By this two things are meant; 1. A formation of fluid cushion around the spine outside of the pia mater to protect spine and blood supply; 2. to furnish thoroughly alkaline field outside of blood circulation to maintain nutrition and to compensate for changes in blood pressure. When you increase blood pressure, you lessen the pressure of the cer. spi. fluid. Spinal cord gets 100th part of the blood of the body (1/13th of the blood to the body's weight in the adult and 1/19th in the child). Get at the blood by treating the lymphatics.

Pia mater is closely adherent to the cord and sends out septa of its own substance into and posterior fissure of the cord and along the ant. median line there is a thickened portion of the pia mater technically called *Linea Splendens*. In the pia mater we find two distinct layers of substance. 1. A connective tissue layer consisting of fibres arranged longitudinally. 2. Another tissue layer consisting of bundles of fibres more rigid than the other layer, and between these two layers, we find (a) Lymphatic spaces, (b) blood vessels, (c) intrinsic nerves that supply the pia mater (d) *ligamentum denticulatum*. This represents a series of fibrous bands attached to the median lateral portion of the pia mater, extending from the foramen magnum to the 1st lumbar vertebra. These ligaments represent long narrow bands lying between the anterior and posterior nerve roots on each side. There are generally 31 of these *ligamentus* bands extending from the pia mater to the dura mater the arachnoid, but not passing through the dura mater. The function of these ligaments is to support the spinal cord, including the pia mater. In this fluid medium, or the field represented by the sac formed by the sub arachnoid. The cerebro spinal is to support the entire cerebro spinal axis and one important point in connection with the *ligamentum denticulatum* is that the highest of the *ligamentus* process or bands, lie between the hypoglossal nerve and the vertebral artery. (Descendens noni goes to the heart.) The sixth nerve is only nerve of motion from roots to armination.

The reticula represents a net work of grey.

substance enclosing white matter in the meshes of its framework. It is located at the base of the posterior horns and externally directly opposite the column of Clark. These columns of Clark represent two symmetrical tracts of medium size nerve cells. Latero dorsal to the central canal, and found only in the dorsal region of the spine, ramifying above and below the dorsal region. The function of these reticularia is to form (a) the framework to maintain the horizontal integrity of the white substance in the spinal cord and (b) to act as a medium for nutrition, and probably trophicity. Trophicity is limited to fibres that terminate in ganglia.

Nerve Roots; The anterior and posterior nerve roots come out from anterior lateral and posterior lateral positions of the cord and forming a double row on either side of the cord; the anterior roots originate in the anterior horn and grow outward as motor fibres toward the periphery. As the spine establishes its connections with muscles and organs in their development, the posterior roots originate in the posterior spinal ganglia in bipolar cells. One polar process extending peripherally, the other process passing towards the cord and terminating in or passing the posterior horns, their function being sensory. From the posterior ganglion around the loop of the anterior and posterior nerve roots there are certain fibres called recurrent fibres, principally motor, that pass around the sensory side of the loop. The anterior and posterior nerve roots pass out in the same trunk from the post. gang. and furnish the typical peripheral nerves. The peripheral nerves are united with the sympathetic system by means of the rami communicantes, of which there are three sets; the two sets are distinct cer-spinal or white fibres representing an ant. and post. communicating branch for the ant. and post. nerve roots. The third set rami communicantes represents the typical sympathetic communicating branch, or gray fibres, passing only in one direction from the symp. sys. to the ant. and post. nerve roots. These rami communicantes communicate on the symp. side not with the ganglia but with a chain, the central portion of the symp. that unites one gang. with another. The central canal of the spinal cord represents the center of the gray commissure. This cent. canal has an important function in the embryonic life; in the formation of the cent. tube, the inner surface of the tube is lined with columnar ciliated epithelial cells. These cells are secreting in their cunations and also protective.

In the adult life these cells disappear pulling

into the central canal and forming a part of the composition of the fluid in the canal. (Cerebro-Spi. fluid is secreted in the embryo in the canal). The canal is continuous with 4th ventricle and it represents in the embryonic life the medium of the development of the nerve cells of the spinal cord (in addition to the cerebro spi. fluid). The rhomboidal sinuses represents in the mature spinal cord a dilation of the central canal in connection with cereb. medularis, and this is sometimes called the terminal ventricle of the spinal cord, indicating that its function is to establish terminal drainage to the fluid circulation in a ventricle of the brain and the central canal of the spinal cord. This is an abnormal condition of this terminal portion of the spine called spina bifida. The origin of this is, first, an over supply of cereb. spinal fluid, second, imperfect development of the post. wall of the lum. portion of the spinal canal (In the embryo the cord extends the length of the spine). In this condition the membranes of the spi. cord are pushed through the opening in the spi. canal on account of the weight of the cer. spi. fluid. The sub-arachnoid spaces of the brain and cord are continuous and connect the 4th ventricle, hence the weight of the entire spi. fluid presses out of the spi. canal with the result that there is a sac formation. Sometimes the rupture of these allow the fluid to discharge and this results fatally.

Sympathetic System.

There are two views in regard to the origin of the sympathetic system.

1st: Is that the ganglionic chain of the symp. sys. originates from the mesoblastic layer and the cells in the ganglion sending out branches toward the cerebro-spin. nerves, these branches being dendrites of the cells in the lateral ganglion. This refers to the symp. ganglion.

This view is the correct view.

2nd: View is that symp. ganglion originates from the epiblastic and developed as offshoots from the ventral roots of the post. spi. gang. The origin, according to this point of view, is by budding from the post. gang. the small branches running out toward the ventral surface of the body, and these branches forming the rami communicantes are dendrite branches.

Super renal bodies are a part of sympathetic system. The visceral life is established first from symp. gang. emigrating cells, passing outward to viscera to form the collateral gang. (Cardiac, Solar and Hypogastric). The splanchnic branches from the

spi. nerve also go out into the symp. sys. but not terminate in the symp. sys. The symp. sys. is distributed to the internal viscera, glands, blood vessels and to the hairs. The symp. sys. represents a collection of ganglia, a number of nerve trunks and a series of plexuses.

1st: There are two great ganglionated cords extending from the gang. of Ribes connected to the carotid plexus through the ant. communicating arteries downward to the gang. Impart on the ant-surface of the coccyx.

2nd: The pre-vertebral plexuses (Cardiac, Solar, Hypogastric).

3rd: Fibres and plexuses of distribution and anastomoses- Aortic coeliac.

No. I. the foundation of the symp. sys. is found in the white fibres, two sets of which pass from the cer. spi. sys. into the chain of gang. of the symp. sys. These are the white rami communicantes, extending from 1st to 2nd lumbar, one set afferent and one set efferent. In the sacral region we find homologues of the white fibres passing directly to the prevertebral plexus and thence to the pelvic viscera, as splanchnic branches of the sacral plexus. The splanchnic are visceral motor accelerators.

In the cervical regions are no white rami. In the upper part of the body the splanchnic branches of the 3rd cranial to the ciliated gang. the 7th 9, 10, 11 cranial nerves correspond with the white rami functions. White rami enter the symp. Sys. at the chain, or in the symp. gang. These white fibres end in a number of ways:

1st: In the sympathetic ganglion.

2nd: Passing through the symp. gang they go to the prevertebral plexuses, or continue with the spi. nerves to the periphery.

3rd: They divide before entering the gang. and send branches to a number of gang.

4th: They may enter the chain and pass to the higher or lower gang. These rami transmit all of the impulses to and from the cer. spi. and symp. sys. Their functions are as follows: (a) Vasc-constrictors from the ant. roots, ending in the lateral gang. (b) Cardiac accelerators ending in middle and inferior cerv. gang. and 1st dor. gang of symp. sys. (c) Splanchnic in connection with 5th to 12th dor. and 7, 9, 10, 11 cranial nerve. (d) Pilo motor to the hairs, irido-motor through the 3rd cranial nerves. (e) Secretory to motor to sweat glands, and the glands in the viscera. (f) Viscero-inhibitory (g) Afferent fibres from the viscera to the cer. spi. sys. (sensory

fibres- pass through

Vaso - dilators passing from the cer. spi. sys. through the gang. and going to the blood vessels and some the especially go to the solar plexus. These control the mesenteric blood circulation.

No. 2 Grey rami communicantes represent one set of grey or true symp. fibres, connecting the lateral chain with all the spi. nerves. These grey fibres are neuraxons of the cell in the lateral symp. gang. These grey rami with the ant. division of the spi. nerves and are distributed as follows;
 1st; Peripherally to the distribution to the ant. division of the spi. nerves, that is, to the muscles and skin, especially in the region of the spine.
 2nd; Some of them pass with the ant. division to the nerve trunk, and then follow the post. primary div. to their distribution. These two represent the vaso constrictors to the blood vessels and is found chiefly in connection with three portions of the body. (a) Heart through cardiac plexus. (b) The intestines through mesenteric plexus. (c) The uterus through the uterine plex.

The Dependents of the sympathetic system are;
 1st; The medium of afferent impulses from the viscera.

2nd; Secretion and trophicity.

3rd; Vaso action.

4th; Accelerator action of the heart.

5th; The movement of the unstriped muscle.

NERVOUS DISEASES.

The majority of diseases are really in foundation of nervous origin. Some of the German writers say that all diseases are nervous diseases. There are two main types of nervous diseases.

(1) Those that originate reflexly in other organs or structures of the body. These are called the functional nervous diseases (functional neurosis, e.g., hysterics, epilepsy, etc.

(2) Those diseases that are primary in the nervous system, involving the structure of the nervous system, e.g., so called brain diseases; spinal cord diseases, etc. This second type has its origin really in the lymphatic system, i.e., over activity and excessive development of the lymphocytes.

The Morbid Anatomy or Pathology of this whole class of diseases may be placed under two sub divisions (a) the abnormal development, structurally, of the neuroglia cells. (b) The abnormal development of the lymphoid tissue formation, in most cases extending over the entire body. Within the nervous system this lymphoid formation becomes a part of the meningeal enlargement. (c) The third field covers what is called "Embalmed Nerve Cells." In this case the serum of the blood seems to act on the nerve cells very much like an embalmed fluid.

For collateral reading the student is referred to Gower's (Lectures on Nervous Diseases) Collins, New York on Nervous Diseases, Church & Paterson; on Nervous Diseases, Dr. McIntyre (Chicago Homoeopath) Stepping Stones in Neurology.

F L U I D

The cells gradually passing out of function as they become permeated with this fluid. This perversion of nerve function, e.g. the morbid anatomy of Eleptomania. In this case the bioplasmic nerve cell becomes the protoplasm. It is a living tissue, but inert and without any typical nerve function. The result of this proteoplasmic change is lack of adjustment in the field of stimulation, cutting off, or isolating, a particular part of the nervous system.

The causes of nervous diseases are pathological conditions of the nerve fibres or cells and reflexes from other diseases of the body caused, as other diseases are caused, by obstructions of some kind. Nervous diseases perhaps originate either from the physiological side or psychic side. The principle exciting cause, that either give origin to or make possible nervous diseases are;

(1) Heredity and certain congenital condition. Chorea is the best illustration of a nervous disease from heredity. Congenital diseases originate from some cause directly

associated with the fetal life, modifying the structure of the embryonic body.

(2) Neurosis, originating from accidental conditions such as traumatism, intoxication of the nervous system, infection, either through toxins or bacteriological agents. This may act in several ways, --(a) by producing direct inflammatory processes; (b) irritation from axis action, e.g, neuritis, followed by nerve degeneration; (c) syphilitic poisoning. Here we have a specific type of intoxication (d) defective metabolism producing poisoning in the nervous system.

(3) Traumatism. This may be injury or lesions e.g, parasis, hysteria.

The majority of nerve diseases are reflex or reactive conditions. But few diseases of the nervous system are traumatic, which is due to the fact that over the whole distribution of the nervous system the wide distribution of the nervous system all over the body, also owing to the action and reaction between the organs and the nervous system and vis versa. Remember that the nervous system has a greater amount of endurance than any other portion of the body. In starvation or malnutrition the nerves are the last to suffer, and a real typical case of Neurasthenia is rare, and when found the condition is practically hopeless. The nervous system has the greatest amount of endurance and will give the readier response than any other portion of the body. This account, for the successful results in osteopathic treatment.

You must remember that the nutrition of the nervous system lies at the foundation of the nutrition passes through the nervous system.

Trophicity lies above the field of nutrition. You may have nutrition without trophicity, but you cannot have trophicity without nutrition, therefore you must provide nutrition to the nervous system in the treatment of all diseases.

In nerve tissue metabolism the fundamental basis is founded on two facts;

(a) The nerve tissue metabolism is on a phosphoric basis.

(b) The materials for the nutrition of the nerve system must all be associated in some way with great fat form of proximate principal is Lecithin. Lecithin is not a pure and simple fat, but is not protied combination. Any fat unless it is in the form to combine with protied is of use in nervous diseases. When an oil or fat is rubbed into the skin it passes through tissues which have protied. This explains the benefit to a child in rickets.

End point The fat must be in a form that will be picked up by the blood. There is fat absorption in the intestines and in the stomach. In the stomach the fat is acted upon by the temperature of the stomach. Olive oil is the best form to furnish fat in the liquid state. The best time to give oil is just before a meal, before the salivary secretions have been stimulated.

Phosphorous is also necessary to the system. The principal thing phosphorous does is to stimulate the stomach and create an appetite for food, but that does not always mean nutrition. Phosphorous like fat, requires to be furnished in organic form, as in vegetables. In the vegetable form celery is the best as it also gives potassium salts. Fruits are also valuable, especially apples. Fish is also good, particularly dried fish as it contains much phosphorous and potassium salts.

3rd point The law of nutrition of the nervous system is that demand regularizes the supply.

You require to treat the nervous system on an entirely different basis, e.g, the Rest Cure. In giving this treatment,

1st Keep food from the patient for a few days; then begin on light food in liquid form

2nd First give milk in small quantities and often.

3rd Gradually give the patient solid food; such as vegetables, whole wheat bread, and along with this graded exercise to keep the muscles active so they will take up the nutrition.

In the latter stages of the Rest Cure, osteopathic treatment should be given to increase the circulation of the blood to and through the brain. Where a patient is affected with neurasthenia, treatment should be given twice a day. In acute cases the effect of a treatment lasts about six hours.

4th point Periodicity. By this we mean that the treatment ought to be given at stated times. Irregularity in treatment must be guarded against. Also periodicity in sleeping is necessary. Regularity should be observed at all times. The same may be said in regard to taking food or in exercise. Keep the patient's mind off the body using every means possible to accomplish this.

The symptoms are first, disturbance of nervous sensibility, i. e. anaesthesia, Hyperaesthesia and Paraesthesia.

The tests that are applied are, to the skin by pressure, by a blunt piece of steel, temperature, pain-determined by peripheral or central test; peripheral test is made by light pricking. Insensibility of mobility e.g, paralysis of the Voluntary Muscular system, recognized by loss of modification of the reflexes. These are of two types. (a) The cutaneous reflexes in connection with sensation, in the nervous diseases there is generally an impairment or entire absence of these reflexes e.g, they are entirely absent in diseases of the peripheral nerves and diseases of the spinal cord, because there is a break in the nervous arc. The same condition is found in nervous shock. There is also an increase in these reflexes in strychnine poisoning,

and a destruction of these reflexes in brain diseases. (b) Tender reflexes E.G. patellar reflexes, ankle clonus, etc. In locomotor ataxia and peripheral neuritis there is the absence or diminution of these reflexes, in Cerebral and spinal paralysis there is an exaggeration (c) Vasomotor Paralysis this is indicated by the abnormal redness of the surface of the skin, sensations of heat etc. This is the sign that is found in the functional neuroses e.g. Hysteria, Neurasthenia.

The opposite condition to this vasomotor spasm indicated by pallor, coldness of the skin. This spasm represents a spasm in the smaller blood vessels, evidenced by stiffness, particularly of the hands and feet. If this continues it will result in an atrophic condition, sometimes paralysis.

(5) Electricity may be applied as a means of testing nervous diseases either the induced or constant current may be used with different results. If the two poles of an induced current are applied to the nerve contraction or the muscles will take place; if the two poles of a constant current are applied to a nerve, or one to a muscle and one to a nerve, there will be no contraction as long as the current is passing, but when the current is broken there will be a contraction, hence a constant will make and break is used in diagnosis. The principal point to be discovered is the presence or absence of the reaction of degeneration, e.g. in Polycyemylitis and application of a galvanic current will give a gradually diminishing response if the current is interrupted. If the current is not interrupted there will be no change or response. This gradual diminution or response is called the "Reaction of Degeneration". If the failure is due to disease in peripheral system we get a different response, e.i. we get no response at all - whereas, if the disease is in the anterior horns of the spinal cord there will be that gradually diminishing response indicating that the disease is central.

All the symptoms of nervous diseases are symptoms of intoxication of the nerve cells. Distinguished from this is toxin formation, which is the result of the intoxication, the nerve cells being compelled to live on poisoned food, resulting in toxin excretions of its cell metabolism instead of normal. The variety of nerve diseases depends on the variety of toxin formation. The result is what perversion of the nervous functions. Where this perversion exists there are two factors struggling for control; (1) the foreign element represented by the toxin. (2) The resisting power of the individual.

General Treatment. In the treatment of nervous the primary point in theory is to raise the protoplasm to its original status of bioplasm. The organism has within itself as a living organism sufficient vital endurance and protective form to keep it in life until all the tissue cells fall down to the grade of

protoplasm. The influence or forces that tend to produce this degradation are poisons that are produced in the system or taken into the system; physical influence whether in the organism or in the environment; weakened nutrition and especially lack of judgment on the two sides of the nervous system i.e. sensory and motor sides. The struggle for existence in the organism shows itself in the attempt to destroy these poisons and the effect to expel or eliminate irritants, i.e. all kinds of foreign bodies germs, etc.

In dealing with the nervous diseases, one of the main points is to pay attention to the detoxinating glands; that is to say, the Pineal glands, the thyroid glands, and the supra-renal bodies in particular.

Most functional nervous diseases represent the intoxication of the nervous system. This applies to auto-intoxication or some other chemical intoxication.

The therapeutics of the treatment of nervous diseases is directed to - (1) The elimination of the foreign elements and (2) The strengthening of its resisting power to the individual organism.

Nervous Diseases are divided into four groups;

- (1) (Functional diseases
- (2) Brain diseases
- (3) Diseases involving the spinal cord
- (4) Diseases affecting the nerves themselves individually or in groups.

Functional Diseases.

Chorea St? Vitus Dance. This is a functional disease, found principally in children between five and twenty five years of age. The most marked characteristics are irregular involuntary muscular contractions. It sometimes extends into the psych field but in this case it is secondary and if to any extent it is really an incurable condition. Another characteristic of its sequence is the tendency to Endocarditis or involvement of one or all of the valves of the heart. Disease is especially found in the female sex, and largely among the lower classes. It comes on most frequently around the period of pargentry.

Causes Among the most common causes are heredity, neurotism, rheumatism, particularly of the muscular type, fright or mental excitement. It is frequently found in cases of early pregnancy following abortion or miscarriage. Reflex irritations are also found particularly in connection with Uterine and Genital diseases and also in conditions of spinal curvature, especially those of the upper cervical and dorsal regions.

Morbid Anatomy. Embolism in the heart when secondary to endocarditis, phyperemia or anaemia involving the spinal center resulting in lack of nutrition in the spinal cords also in the nerve cells of the brain.

Symptoms Spontaneous and irregular twitching of the muscles, jerking movements particularly of the feet and hand. At first subject to voluntary control and later not subject to the control, impairment of sensation, particularly in one hand and passing from the hand to the face, then exaggerated movement of the fingers. the child cannot sometimes grasp an object, sleeplessness pain in the heads and limbs, irregular jerking movements of the head and the eyes, partial or complete loss of speech. In the latter stages we have muscular spasm with delirium and mental irritability and excitability. In the acute stages the disease lasts from six to fourteen weeks. If chronic it assumes the recurrent form, recurring sometimes every day, or every few days or weeks. Gowers tells us of a specific test which is to make the child take something in the hand and hold it high above the head. In a few moments the hand will jerk, and later the head and neck will jerk. Then apply the test to the other hand. Associated with Chorea we find Infantile Convulsions. These are reflex convulsive jerkings of the muscles secondary to some irritation in general e.g., it is found in small children secondary to gastric disturbances. It sometimes indicates the oncoming of some serious nervous disease. Chorea is often introduced by this infantile convulsion. Lesser types of the convulsions are caused by dentition especially delayed dentition, the presence of parasites in the stomach, sometimes from improper treatment of infectious diseases, e.g. Scarlet fever, etc. There are two types of spasms, the Tonic and the Clonic types. In some cases the two types alternate. (The Tonic is periodical and the Clonic continuous). These convulsions may be of three varieties. (1) Epileptiform. Here there is also always loss of consciousness or a cerebral involvement or brain tumor or embolism. (2) Hysterical. A disturbance of consciousness but not its loss. (3) Spinal. Convulsions. Here consciousness is normal. Spinal centers exaggerated. Here we have the typical types of chronic contraction which generally comes on suddenly from some reflex irritation, e.g. lesions in the cerebral or upper dorsal regions or it may originate from teething, gastritis, enteritis or bronchitis. The danger in this type is paralysis, the convulsions going on so long that the muscles will be paralyzed, e.g. the respiratory muscles, resulting in death.

Another type that falls under the head of Chorea is Paralysis Agitans (Parkinson's Disease.) This is an adult form of Chorea. It is a chronic nervous condition, accompanied by tremors of the muscles with muscular rigidity, causing change to posture and gait of the patient. It comes on usually from thirty to sixty years of age, more common in the female sex. It is closely associated with toxic, or Septic poisoning, exposure, alcoholism, blood poisoning following vaccination,

gonorrhoea or syphilitic infection, rheumatism, etc.

Lesions. These are in the cervical and upper dorsal regions and in the upper and middle ribs, affecting the nerve centers, both spinal and sympathetic that lie between the brain and the cardiac and solar plexus, This differs from the Md's ideas; they say it is brain disease, but I say it is spinal disease.

Morbid Anatomy. This condition is associated with a hardening of certain portions of the spinal cord, sometimes extending to the medulla and pons, secondary to sclerotic changes in the peripheral nerves, e.g. it is an ascending sclerosis.

Symptoms. The muscles tremble spontaneously and there is a rhythmic muscular rigidity, but with this there is continued agitation or excitement, the degree of excitement depending on the extent of the intoxication at the center. It usually affects the arm on one side and the leg on the opposite side. It may affect both, but it always does so by this crossing. In treating manipulate the arm until it loses its paralysis agitans, but the opposite leg will take it on, showing the trouble is in the reflex center. Locomotion takes place with the "to and fro movement," produced by the contraction and relaxation of the opposing muscles. Sometimes there is intense neuralgic pain at periodic intervals with vertigo, inability to walk or raise the arm, a tendency to slow down all function eyes moving slowing, etc., showing plainly in digestion, over feeding giving gastric disturbances. But if food is given slowly and at short intervals the patient can take a sufficient quantity.

The Lesions we find are subluxations of the vertebrae in the lower cervical and lower dorsal regions also lesions of the ribs in this area, tension in the deep muscles, rigidity of articulation and of the ribs and intercostal space muscles. Atlas lesions are common also ones in the upper dorsal and in the lower dorsal, hence we have two portions of the cord involved, cutting off the blood supply to the cord and to the lower part of the brain. The circulation to the brain is located generally at the seventh cervical and the upper dorsal lesions will affect this. We often find lesions at the first and second dorsal also lesions involving the sympathetic system, generally of the sterno mastoid, trapezius and rectus capitis, anterior muscles in reference to the superior cervical ganglia, which lies under the sheath of the latter muscles. The sympathetic lesions cause muscular incoordination.

Treatment (1) Relax the muscles all along the spine downward. (2) Give thorough extension of the head and neck, followed by rotation of the head on the neck, and the neck to the body. (3) Correct

the lesions in the cervical and dorsal regions. (4) Look for reflex causes, producing nerve irritation. These may be found in the uterus, stomach, intestines and eyes. Musser says that 90 percent are associated with eye trouble, but to remember that in many cases eye conditions are secondary to Chorea. (5) Give thorough treatment in the upper cervical regions, articulating down to the seventh cervical to reach the medulla and stimulate the sympathetic action, especially to correct the circulation through the brain. (6) Attend particularly to the heart conditions as there is a tendency for it to be excited during the spasms. Note that in this case it is the sympathetic side that is being irritated. (7) Attend to the kidneys stimulating their action, a characteristic in these conditions is a suspension followed by increase of urine of lowest specific gravity showing a kidney condition. Therefore you should stimulate the kidney action at the twelfth dorsal to increase the action of the kidneys and at first and second lumbar to control excretion from the kidneys. (8) Manipulation of the muscles along the spine from above downward to keep conditions away from the head. (9) Inhibition of cervical sympathetics to control the spasms. (Supervocal) Gangregion. In ordinary cases this will control a choroid spasm. (10) Strong pressure at articulation of third and fourth ribs, in relation to the spine. Deep pressure between the third and dorsal vertebrae at the transverse processes and head of ribs, reaching the left pneumogastric in relation to the sympathetic system. (11) In severe cases when spasmodic conditions of the muscles is great, give rectal dilation once a week. This is applicable in paralysis agitans when sphincter muscles are rigid. This affects the entire sympathetic system, (12) The patient should be kept from over exertion, if she becomes exhausted with spasms. Keep her in bed and give a light nutritious diet of fruits and vegetables, avoiding meats and high seasoning and the acid fruits, such as strawberries, also tomatoes. The irritative of the acid element sometimes causes chorea. Keep the patient in pure air as much as possible. Use cold sponge baths before going to bed. If skin of child is dry or hot, use vapor bath in connection with the cold bath in treating.

In treating Infantile Convulsions during attack.

(1) Give strong inhibitory treatment at 6th and 7th dorsal. Followed by rhythmic treatment downward through the lumbar and sacral regions.

(2) If due to indigested food, give treatment to produce vomiting let by strong inhibitory treatment at the 3rd 4th and 5th dorsal and repeat until relieved.

(3) If the irritation is in the intestines use a hot enema and give anti constipation treatment.

Stimulation at 11th and 12th dorsal.

(4) If the teeth are the cause, cleanse the mouth well by warm water and stimulate strongly the cervical region, especially of the cervical to keep up the circulation, from the brain to the teeth. If the child is teething it tends to pull the blood from the brain. Strong pressure (inhibitory) catch the 7th process between the thumb and finger and pull the head back against this pressure, but do not hold too long, better let go and take hold again.

(5) If the convulsions extends all over the body, especially if there is venous condition (bluish disease) put the child in a hot bath, about 98 degrees F. Put it in all over for a moment. If the spasm is severe deliata the rectuom at the same time upu put the child in the water to get reaction in the sympathetic system. Paralysis agitana.

The lesions are found in the cervical and upper dorsal region and upper ribs. The cause is a weakening of Central Nerves resulting in the invasion of nerve centers by toxins. All the lesions are found high up in the spine.

Treatment.

Relax the muscles in cervical and dorsal region, from above downward.

(2) Correct the lesions in spine and ribs by correcting first the secondary lesions.

(3) Through treatment by articulation in the spinal area corresponding to the part involved, which in this case is the arm and leg,

(4) Relax the muscles in the arm or lg or both, and around the hips and shoulders. It is best to relax the muscles from the tips of the toes upward and also from the tips of the finfers upward.

(In dropsical conditions use the same method.)

(5) In treatment for the general circulation, i.e. to stir it up. Here the rigidity of the muscles is a characteristic, so give strong stimulation at 3rd to 5th dorsal rotation of the limbs etc.

(6) Strong inhibition. Treat to vasomotor in neck by treating suboccipital cervical ganges, to check previous stimulation in treatment. Meet tips of your fingers behing the processes and use cushions of your hands to press down on ganglion.

(7) Keep the patient free from all excitement and urge regularity in all habits Use non exciting food and use food chat calls for long digestive action.

Epilepsy.

This is a chronic condition of the Nervous System marked by spasmodic paroxysmal convulsions coming on suddenly, sometimes tonic and sometimes clonic, and usually producing a loss of consciousness. In some cases there is consciousness with a disturbance of the Motor and Sensory functions. This disease generally

occurs in early life, mostly before puberty and more frequently in the female sex. Predisposing conditions are; Instability, Heredity, Neurosis, Hysteria, Sometimes Structural Development of the brain. Exhaustion of the Nervous System.

Exciting causes. Intense emotional conditions, fright, traumatism, intoxication of the nervous system, reflex infectious diseases, suspended or suppressed menstruation, reflex convulsive conditions, or chronic or infantile convulsions, etc. Parasitic development producing reflex nervous conditions, thickening of the brain membrane. Lesions in the vasomotor field. Sometimes Morbid Anatomy lesions in the Medulla, also lesions of the 7th cervical and upper dorsal, cutting off the vertebral blood supply or vasomotor blood distribution to the brain. The 4th dorsal and 4th rib lesions are common, affecting the upper dorsal sympathetics and causing interference with the vasomotor control of the blood. We also find Genito urinary disturbances

There is no distinct Morbid Anatomy. Some claim cyanid deposits in the brain, but this is covered in the field of nutrition.

TYPES

(1) The Grand Mal. This type is generally associated with an aura (irritation) at some one particular point, e.g. fingers, toes, hand, stomach, etc. The patient may complain of feeling a bug in the palm of the hand which feels as if it would creep up to the brain and then the patient falls. The muscles at first become rigid; the eyes wide open, face pale and cyanosed, and respiration becomes difficult. In the Grand Mal type, the epigastric (Solar Plexus) is the principal field of irritation. We also find the aura in connection with the optic and olfactory nerves. Sometimes the senses of smell is lost. In some cases there is no aura at all, but the starting point seems to be in the brain. There is dizziness, fainting, peculiar rotary movement of the head, or head and neck, and sometimes of the trunk of the body.

There are three stages of this type;

(1) Tonic stage. Marked by strong rigid tetanus of the muscles, involving the head, neck and eyes, the spine tending to past flexure. (2) Clonic stage. Here we have muscular contraction intermittent, being a strong and violent movement of the eyes, followed by dilation of the throat frothing at the mouth and the involuntary discharge of excretions. (3) Comatose stage. Here the patient falls in subconsciousness and seems to be asleep. Here there is conjunction of the nervous system with difficult and heavy breathing; Stertorous, and the patient gradually waks out into a conscious condition. The tonic and Clonic conditions leave a soreness of the

muscles. (2) Petit Mal This beginning is a disturbance in sensation or motion, with fainting or loss of consciousness. There is no distinct aura. The eyes are staring, wide open rigid and protrude. The muscles are rigid in tonic spasms.

(3) Jacksonian Type This is associated with a cortical brain lesion, e.g. tumor in motor area of the cerebrum. The tumor is followed by inflammatory processes and softening of the brain and sometimes abscess. In most cases of this type, consciousness is not lost. The starting point is a numbness in some point, corresponding to the area in the brain. This is followed by muscular twitching and a spasm.

(4) Mental and Psychic type or Somnambulism Epilepsy instead of convulsions. Here there is mental inhibition of the muscles, either with or without consciousness. The attacks vary in frequency, sometimes daily or many times a day, or weekly, or monthly. The tendency is to periodicity. Gastric conditions have much to do with the determination of periodicity.

(5) Status Epilepticus or Tetany. Here we have a series of convulsions, with a high febrile temperature, generally accompanied with excessive appetite and its gratification. The muscles have often a marked rigidity. Etiology. Cause or causes.

(1) Interference with the nutrition of the spinal cord, (2) Irritation of the motor nerves supplying the muscular system. (3) Interference with the nervous side of the Nervous System. Lesions most commonly found are at the 1st and 2nd and 3rd cervical. 7th cervical, middle dorsal, 3rd, 4th and 5th dorsal, curvature in middle dorsal extending to upper lumbar lesions in splanchnic area and ribs. The cervical lesions obstruct the blood supply to the brain and to the medulla, sometimes causing mechanical irritation to the sympathetic nerves. Preventative Treatment.

This really covers the whole field as little can be done during the spasm. During the aura stage press the head backward against the hand which is holding tightly in sub occipital region, which tends to equalize the blood flow. Then stimulation of the Superior Cervical ganglion (A direct sympathetic affect and an indirect medulla affect.) Another abortive method is to apply a ligature constriction to the limbs, in which the aura begins. If in abdominal region, around the waist by putting a pad over the aorta. Forceful movement and rotation of the hands, with application of the ice pack to the spinal column only, and not to the head. When the aura is in the epigastric area, there is an anti peristaltic action in the stomach or intestines or both, causing reactionary nerve currents in the 10th cranial. This is overcome by inhibition of the 10th cranial, along the neck or at the 3rd, 4th and 5th interspaces close

to the head of the ribs. Then a deep kneading treatment to the abdomen to control the circulation of the blood of the abdominal cavity. When the patient responds stimulate the solar plexus. The cause of aura is the status of the blood and the stasis is caused by a vaso constriction. Anything tending to overcome this is of service. You can get the best results through the sympathetic system as this is the great medium of vaso constriction.

Treatment between attacks.

(a) Place patient on back with one hand on top of the head and the other pushed down behind the neck to the 5th dorsal region, with the finger and thumb on either side of that point. Move the muscles out from the spine while giving rotation to the head from side to side and so on to each vertebrae upward.

(b) Give strong traction to the head to stretch the neck and spine. (c) Correct lesions, particularly in the cervical region by articulation. (d) Look to the rest of the body for reflex irritation, especially in the intestines and genito urinary. (e) Try to correct the blood flow to the brain. Do this by placing the fingers at angles of the jaw on both sides and make the patient open his mouth against strong pressure. Also give strong stimulant treatment of the 6th and 7th cervical to transverse processes. Strong stimulation of Superior Cervical ganglion, but do not give this if the patient has any heart trouble. (f) Stimulate the splanchnic. (g) Attend to the diet of the patient. Patient must not eat too much. Use easily digested food that may be quickly acted upon. In the Jacksonian type the only cure is a surgical operation to remove the tumor.

Tetany.

An acute affection of the nervous system in which we find spasmodic contraction, chiefly in connection with the hand, either representing a continuous or intermittent construction. It is sometimes uni. and sometimes bi lateral and is most commonly found in children and up to 21 years of age. A peculiar point is that diarrhoea is nearly always accompaniment, either preceded or accompanying, also found in female sex at the period of puberty, due to menstrual or uterine disturbances. Also following lacerations in child birth. It seems to act through mucous membrane or the nervous system, the tetanus being here in the lower extremities also secondary to dilatation of the stomach and this is a typical result of hyper acidity. Also found after operations for goitre, when part of the thyroid has been removed, tetany resulting.

Tetany begins with a tingling and burning itching sensation found in the hand or feet. In the thumb of the hand and great toe of the foot, it may be at first be confused with gout, but gout has also swelling.

It then passes to the palm or sole and there the rigid contraction is found. Then comes rigid flexion of the hand or foot, when the reaction from this is rigid extension, the hand or foot standing straight out and the joint being involved. The condition may pass to the wrist and elbow and ankles and knee joint. Following comes cramps which may extend to the trunk of the body and liability to distortion of the thoracic or pelvic muscles. At this stage spasms of the muscles particularly of the respiration and hear muscles. During the spasm there is great excitability of the patient being irritated and flustered and the patient cannot mentally control it. Among other symptoms is the increase of temperature and profuse sweating.

Treatment of Tetany.

The part of the Nervous System involved is the spinal cord. The old medicinal way was to give something to paralyze the nerves, causing the contraction of the muscles to cease through the nerves.

The Osteopathic principle is twofold: to remove the irritating cause and second to stimulate the irritant or toxin which is causing the irritation. Do this by (1) Manipulation of the spinal muscles downward along the spine in order to establish nervous co-ordination or harmony. In manipulating the spinal muscles both superficial and deep you reach the cerebro-spinal system.

(2) Thorough extension to head neck and then the spine. You have aroused the spinal centers, which relieves the spinal cord irritation. If the sym. were to be reached you work on 1st dorsal or stellate ganglion, just above the head of the 2nd rib.

(3) Manipulate the muscles thoroughly around the neck, especially in the vasomotor area. (Superior cervical ganglion, to reach the ~~base~~ blood).

(4) Stimulate strongly the Sympathetic system in the cervical region to get complete control over the sensory nerve supply. The theory of this point is that an irritation in the form of tension is a motor tension, but behind this lies a sensory irritation which must be removed.

(5) Look for the lesions in connection with the vertebrae and ribs, corresponding with the brachial plexus and all its branches and the Sacrosiatic plexus.

(6) Use the arm as a lever in raising and spreading the ribs, especially the upper ribs.

(7) See that the patient gets an easily and quickly digested diet. Eliminate any food tending to stimulate constriction, e.g. (Constriction is through the Sympathetic System an Adrenal bodies which take care of waste element from sugar. The Thyroid and Pineal take care of wastes from protoid. Recommend in cases of this kind, milk sugar. Have patient take sponge bath

along the spine and chest as a stimulant to spinal and intercostal nerves. Use deep breathing.
Professional Neurosis.

A number of nervous conditions, the main point of which is Neurosis or weakening of some particular part of the Nervous system, produced by an attempt to overdo the work of the muscular system. Called professional because the different forms are associated with different occupations e.g. writer's cramp. The chief symptom is a spasm, either tonic or clonic. Along with the spasm there is pain. The pain is caused by the tetanic condition of certain muscles, or groups of muscles. The predisposing causes are neuroticism, traumatism, excessive strain, pains plasterer's cramp, etc. The lesions of any exciting cause is a fatigued condition of the spinal centers, resulting in the impairment of the nerve action.

Writer's cramp. This represents an excessive strain on the muscular system continued up to the point of tonic spasm of the muscles. The reason is that act of writing, one set of muscles is continually used without bringing into play the opposing muscles. The result of this is in-coordination of muscular activity. When kept up for some time, we get reaction on the spinal nerve centers and sometimes get the lesions which represents the keeping up of the strained condition. It is well here to distinguish between a producing lesion and the maintaining lesion, e.g. lesion in Brachial plexus area keeps up the cramping condition of the muscles. Lesions are of two types, either typical structural or in the field of activity. Here it is in the muscular condition.

Treatment.

Relax the muscles along the spine downward beginning in sub-occipital region.

(2) With patient sitting, raise and articulate the upper ribs and dorsal vertebrae. Put the ² thumb or finger

at inferior border of the 1st dorsal vertebra and raise the arms above the head while you apply the pressure on vertebra and hold the pressure while lowering the arm. Give stimulant. Treatment downward to the 6th dorsal. Then give the articulation down through the cervical and dorsal beginning at the 6th cervical. Catch the transverse processes and rotate the head on this vertebra.

(3) Strong extension to neck and spine to free circulation of the spine. General stimulation to whole of spinal cord.

(4) Correct lesions found in the clavicle, scapula and ribs

(5) Apply extension to arms of patient beginning with sound arm first place the foot in axilla and pull against. Extend straight out or down. Elevate clavical and reflex under the margin of the clavical. Intreating

the arm you are reaching the general centers of the brachial plexus.

(6) Stimulate the radial, ulnar and median nerves first by working deeply from the 5th cervical down to the 5th dorsal. also by articulating the head and neck and upper ribs to reach the sympathetic branches. In articulating the ribs to reach the sympathetic system, try to pull the rib away from the spine.

(7) Articulate and raise the first five ribs with patient on back, by placing fingers of one hand at the head of the ribs close to the spine and pushing up. Articulate while raising the arm. Here you reach both sympathetic and spinal branches. It will coordinate the two. (8) Either make patient rest from work, or change occupation to bring into action different muscles.

Paroxysmal Headache.

Among the Neurosis we have a number of paroxysmal headache. Two types of this condition are found, (1) Migraine (or Megrian) (2) Hemi Crania, Migrains. Here we find severe pains in head, periodically every two or four or seven or fourteen days, always associated with nausea and vomiting and paroxysmal. There is a disturbances of vision, tempature and circulatory disturbances of the head, generally associated with flushing or palor of the face. The headache represents a pain either, first idiopathic (self originating) due to some lesion in the cervical region either osseous or muscular, or secondary, sympathetic or reflex from other conditions. The second type is most frequently found in the female sex and often dating from some menstrual disturbance at the time of puberty. In some cases we find this type secondary to eye strain, and in other cases to an aweiima traced back to earlier period of life. Some writers claim that all headaches are vasomotor, because the symptoms of headache are vasomotor symptoms. We must remember that symptoms are attempts of nature to counteract the cause, e.g, flushing, palor, cerebral fainting, rush of blood to the head and collapse. In all cases the 5th cranial is involved and this is the reason that in the fever we have neuralgia or toothache, often preceeding the headache. Nature is attempting to eat up some compensation. Among the causes of Migraine we find nasal catarrhal, Dental Caries. These cause an interference with the 5th cranial. Then a muscular condition, then a spinal lesion which keeps up the condition may be muscular or vertebral. The paroxysmal headache usually comes on suddenly without any warning. Symptomically it is associated with restlessness, asinital symptom and it is found in many forms, e.g, a mental premonition of a storm, dream of a restless

PARAAXYSMAL HEADACHE.

1 Migraine.

IN Temporal Reg.

1. Severe pain in head. Sharp, cutting.
2. Periodically 2-4-7-14 days
3. Nausea - Vomiting - Paroxysmal
4. Visual disturbances.
5. Tent. & circulatory distb. of head
Flushing on pallor of face.

Etiology.

1. Idiopathic (self originating) due to
 - a. Osseous or muscular cervical lesion. (5th cranial always)
 - b. Sympathetic or reflex.
 - c. Nasal Patency.
 - d. Dental Caries.

6. Onset sudden. NO WARNING.
7. Restlessness. Mental Prostration.
8. Chilliness & vertigo, spots before eye.
9. Eyes. Very sensitive to light. Pupils dilated
10. Face pale. due to constricted vessels.
11. Temporal artery constricted. T.P. = strong & labored.
12. Tenderness in cervical region. Sub. occip. worse.
13. Cramping of facial muscles (sometimes)

2. HEMICRANIA, two types ^{of pain} IN OR Headache.

- a. Boring pain local.
 - b. Dull aching pain diffused over 1/2 of cranium
- a + b Pains increase until surface VERY SENSITIVE.

1. Rigidity of Neck Muscles. to middle of clavicle & to thorax. Sometimes ANGINA SYMPTOMS.

Note: 1. due to involvement of sensory branches of upper 5 cervical Nerves, Sensory branches of Neck Muscles & Medullary Sensory branches of 10th cranial through Sup. Cervical ganglia.

nature. It may be either a body or mental restlessness; disturbance in vision as spots before the eyes. Chilliness with vertigo (an unusual combination). Sharp cutting pain generally limited to temporal region in some cases boring pain and in this boring pain the only differential point from Meni Crania. In Migraine the pain is always sharp and cutting. Patient is describing it from the sensory side. Pain may extend to any portion of the head, or entire head, usually to any portion of the head, or entire head, usually gray hyperaesthesia and eyes are very sensitive to the light. The temporal artery is contracted, hence we get a very strong labored pulse in temporal artery. Compare the temporal and radial pulse. Face pale, pupils dilated, palor due to constriction of blood field. Tenderness in cervical region, sometimes so severe that the patient cannot be touched in the sub occipital. Cramping of facial muscles. It usually comes on at periodic intervals, according to the individual. Sometimes we find scalp pain, extending into the bones. In this case there is probably some toxic condition which is keeping up the continual constriction of the minute blood vessels both to bone and tissue. Lesions are found in the upper cervical, these lesions maintaining the headache, secondary to over fatigue. In Meni Crania are two types associated in one headache. Boring pain local, and a dull aching pain diffused over one half of the cranium. Both pains gradually increase in severity until the surface point of the boring becomes intensely sensitive and the general surface of the half of the head becomes due to the constriction and then reaction by dilation. Next we find rigidity of the neck muscles, extending down through the cervical region to the middle of the clavicle, thence down to the thorax, sometimes with slight angina symptoms. The reason for the rigidity, etc., is the involvement of the sensory branches of the upper five cervical nerves which send sensory branches to the neck muscles and to the medulla. Then there is the involvement of the sensory branches of the 10th cranial probably through the superior cervical ganglion. These sensory branches of the 10th cranial sending branches to the heart, connecting with the arm and the thoracic muscles in the brachial plexus and sending through the superior cervical ganglion sensory branches to the posterior bones of the cranium, pain first in scalp then into the bones of the vertex. This explains the vomiting, a result of the 10th cranial involvement. This headache differs from neuralgia in this respect, that the headache is caused by some direct irritation of the nerve supply, whereas neuralgia or rheumatism is caused by something in the blood, e.g., the toxins of some infectious diseases or

defective metabolism or gastro intestinal disturbances.

Treatment of Headache.

The field of lesions is 1-2-3 cervical region of vertebrae, 4-5 dorsal vertebrae region, 9 and 10th dorsal relation to the liver, 7th and 8th, ribs in relation to the liver; clavicle and 1st rib lesions. These lesions represent either direct nervous interferences or disturbances, or circulating disturbances. In the upper 3rd cervical vertebra we have direct nerve lesion interfering with the posterior branches of the cervical nerves.

In common headache - to relieve Headache. (1) With patient sitting place fingers and thumb on either side of back of head above articulation of atlas with the cranium. Apply strong pressure towards the posterior median line. Note this point, why, Because you get to the point of the sensory distribution of the 10th cranial. To treat the 10th cranial in connection with headaches treat above clavicle. While applying this pressure, place the other hand on the forehead, pushing the head back gently on the pressure of fingers and thumb in the sub occiput. (2) Patient on back; lay cushion of hand along the sides of the spinous processes on the two sides of the neck, apply strong pressure on both sides, while you gently push in toward the spinous processes, while you move the head with the arms. (3) With the two hands over the great vasomotor area (superior Cervical Ganglion) apply strong pressure, allowing the head of the patient to drop backwards. Pull patient back, so that the shoulders may be at the edge of the table. (4) Patient sitting if possible. Raise patient's arm above the head. With the other hand apply pressure between the spinous processes of the upper dorsal vertebrae and the spinal border of the scapula away from the spine. (5) In nervous headaches, with the patient on the face, apply pressure along the ridges of the spinous processes in the dorsal region, until the muscles are relaxed, and then articulate in the same area. (6) In sick headache give strong inhibition in the splanchnic area and in addition strong inhibition over the pit of the stomach and the solar plexus. (7) Apply extension to the neck and spine, followed by stimulation, particularly to splanchnic field and downward. (8) Correct lesions found in the first, second and third vertebrae area, or at the sixth and seventh area. The upper lesion is a nerve lesion, the other a blood lesion, i.e. the vertebral blood supply to the brain. (9) Place the finger or thumb at the lower part of the first dorsal vertebra, the other hand on the vertex of patient's head, apply rotation to the entire structure between the head and the first dorsal keeping up the pressure of the thumb at the first dorsal. This gives a single or double effect, and effect on the vertebral circula-

tion and on the entire cord. (10) Direct treatment along the venous blood path from the middle of the forehead over the supraorbital region, around the eyes, external to the infraorbital region, and then down to the inferior angle of the jaw and along the path of the jugulars, giving some slight movement to the neck. (11) Treat along the path of the fifth cranial nerve in the face and head for palliation of the pain. Along with this give treatment along the longitudinal sinus. strong vibratory treatment, to reach deep down. (12) Deep inhibitory treatment over the abdomen and solar plexus, following path from the solar plexus of the adrenergic reflexes, i.e. muscular reflexes on the surface of the walls of the abdomen. We find a series of reflexes from the anterior superior spine of the ilium, radiating to the umbilicus and from that along the ribs. There is almost a pulsating action. (13) Patient must have rest during and after paroxysm. If possible use rest cure treatment. Note the uniform warmth of patient's body. The complete lung ventilation, by deep breathing, elevation of thorax, etc. You will find excessive viscosity of blood. Exercise of Patient. Exercise by walking, using legs and upper trunk exercises. They usually do not want to talk. Neurasthenia is a condition representing deficiency of Nerve force manifesting itself in sensitiveness, tenderness, irritation, especially at certain points in spine which vary in individual cases and from which underlies the condition. Owing to a continued lack of assimilation there is not normal nutrition. It is found in those disposed to or subject to other forms of neurosis, e.g. in hereditary neurotism or hysterical patient.

Lesions.

These are found in the cervical region and upper dorsal region, principally lateral lesions, displacements of ribs and intercostal muscle contraction. The exciting causes are over strain of the mind or body. The excessive use of stimulants, alcohol, opium, tobacco, cocaine. The cocaine may produce a localized neurasthenia. Dentists are using cocaine and are doing damage. There is less after danger in chloroform than use of cocaine. Also gastric cardiac and pulmonary disturbances which act principally through the development of toxins, e.g. a gastric intestinal toxin, giving morbid and products which are absorbed and go to the nerve system. Such cases of toxic and intoxication are more difficult to cure than from over work. The lesions maintaining the neurasthenia are lateral deviations of the vertebra in the upper dorsal, twisting of the ribs. Intense contraction of the muscles in the inter-scapula area.

Posterior cervical vertebra maintaining the nervous system in this exhausted condition. These lesions keep up the mal-nutrition of the nerve cells and fibres. Systems. The patient is anaemic and lacks physical and mental vigor; is easily tired. There is irregular headache. Here or there located. Pain in back moving from lower part of the back upward. This is a strong differential point. You may doubt in a woman whether uterine condition or neurasthenia. If the pain moves from lower to upper it is neurasthenia. If reverse uterine condition. There is an aching in the lower part of the spine. Pain in the limbs, always associated with abnormal heat, another differential symptom. In pelvic disturbances aching is in the back and down limbs with coldness of limbs. The neurasthenic flushing of the limbs is vasomotor. Another symptom is Arterial throbbing. In localized neurasthenia have a localized throbbing. In general neurasthenia a general throbbing. May complain that the whole surface of the body is throbbing and this crawling or creeping is the pulsation of the small arteries until they become engorged and press back resulting in the sensation of crawling, etc. It is found in the late stage of neurasthenia.

Treatment.

The common lesion, riblesions, constricted thoracic condition. These lesions interrupt the inter-communication between the two great nerve system. The normal nervous condition depends on action and reaction.

(1) Relax the muscles beginning from below upward, sacral to occipital areas, distinguishes this from all others. Then give through rhythmic treatment at 3-4-5 dorsal region to reach circulation, superficial deep and pulmonary through the heart. (2) Patient on face. Give strong inhibitory pressure at sides of spinous processes pulling up the ribs from anterior to angles against your pressure. This gives two results. (a) The sympathetic chain lies anterior to the neck and pushing up rib, opens up and relieves the sympathetic system. (b) The cerebro-spinal system is stimulated through to communicating fibres. Follow this by strong extension of the spine. (3) Attend to any reflex conditions associated with the eyes, ears, stomach, viscera, etc. (4) Springing articulation to vertebra to stimulate the spinal cord centers. (5) Look out for the condition of constipation and keep relieved. (6) Keep the patient free from all excitement and keep on a light nutritious diet. Give the cold sponge bath and rest and change of occupation and avoid the use of all stimulants and meats. In diet use an easily liquified fat, e.g. olive oil, butter, some such preparatory fat as Russel's emulsion. Use

no meats and plenty of water.

Hysteria.

Here we have a nutritive disturbance of the Nervous System. This nutritive derangement manifests itself by certain signs technically.

called "Stigmata". Stigmata occurs during the paroxysm of hysteria according to the old view it was exclusively a disease of the female sex supposed to be associated with the sexual system in some way. This has been found to be incorrect. Often it is found among male, and in such cases is worse than the female. The male subjects have or have had, some form of liver trouble. This is sometimes called a disease of civilization. It is an unbalance of the Nervous System, the uncontrolled action of the Sympathetic. It is found chiefly in early adult life, sometimes in the pre-senile stage, 50 to 55 to 60 years of age, from the decline or decay of both physical and mental conditions. The most important predisposing cause is hereditary neurotism. Hence you find Hysteria a foundation for apoplexy or epilepsy of adult life; also for insanity. The exciting causes are: Traumatism. Especially involving certain portions of the spinal column, more particularly from the 10th dorsal down through the lumbar region. This is the reason it is so often associated with the female sex. The loss of uterine control resulting in functional disturbances of a reflex nature. We also find prolonged or mental or emotional excitement. Enteroptosis which may affect the Solar Plexus. In some cases of hysteria you find a type of epileptic hysteria, because there seems to be an aura associated with the pit of the stomach. You can relax in such cases relieve the spasm of abdomen by pulling up the intestines as far as possible. the Sympathetic System gets out from the control of the cerebro spinal system, resulting in hysterical symptoms, e.g. cerebro spinal explosions of nerve energy.

Symptoms are: (1) Sensory in type e.g. anaesthesia of certain part of the body, usually one side showing itself, e.g. in skin pallor and sensation if cut etc. Loss of the muscular sense nor from paralysis but lack of sensation and associated with loss of hearing, taste, smell. Another sensory symptom is analgesia generally in connection with one arm or leg or one articular portion of the trunk of the body. Also hyperaesthesia, particularly along the spine from the 10th dorsal down, especially on the right side.

(2) Motor Symptoms.

Paralysis is due to loss of willpower sometimes general but more often local in the lower extremities. in the vocal cords, bladder, arms, face, spasmodic flexion of the hand and arm or foot. Incoordination

between heat and cold e.g. forearm hot and upper arm cold etc. involving the thermic motor fibres.

Hemorrhage, particularly the bloody frothing at the mouth is found in connection with the lungs and here it is of vasomotor origin.

(3) The visceral symptoms are disturbances in appetite, e.g. capricious appetite, diarrhoea in connection with the hysteria spasm. Constipation in the same connection. Hysterical cough which is associated with the organ or organs causing the spasm. Cough may cause suppression of urine. Gas accumulation may also occur.

(4) Mental Symptoms. There are irritability or depression. Sometimes entire loss of will power. "Musser says a typical symptom is selfishness, exaggerated self-hood.

(5) Physical signs. These are associated with the so-called zones, e.g. an area in neck just below the sub-occiput. This may be burning hot or ice cold, or a sharp localized pain may be present. It is always relieved by strong inhibitory pressure over the zone. Sometimes hysteria has a premonition, e.g. vertigo, the feeling of distress either in the cardiac area or oesophageal structural. The presence of a phantom tumor or "Globus Hystericus" in throat. The tumor may take the form of a floating kidney, tumor, etc. Sometimes it comes on without premonition. Here de of the nature of apoplexy or epilepsy the attack coming on suddenly. There are four stages in the development of hysterical epilepsy so called: Epileptic paroxysm manifested by tonic convulsions of the muscles followed by ~~max~~ coma.

(2) Violent convulsions with the tendency to drop down into physical catalepsy.

(3) The peculiar position assumed by the body in this cataleptic state, representing paralysis, with a mental explosion of passion, anger, emotion.

(4) The return to normal in connection with delirium hallucination, illusion, etc.

Treatment.

From the osteopathic side Hysteria is a functional neurosis kept up by some irritating lesion of some kind. These lesions are found in the upper cervical region and 9th dorsal and down through the lumbar region.

(1) Try to gain control of the patient, both physically and mentally by trying to find out the exciting cause, its location and actions. If it is in the spine, or in some organ, get control by inhibition.

(2) Correct the lesions that maintain the conditions.

You often find the lesions come and go, showing an irritating cause affecting the soft tissues which affect and produce ossions lesions. In several cases treated I have found the variability of spinal lesions from

time to time in hysteria.

(3) Give the patient general treatment to build up the general system and to coordinate the nervous systems. (Articulation of spine downward in this case being the best treatment).

(4) Give special attention to the kidneys and intestines. You will always find Hysteria either a functional derangement of the kidney or of the intestines. We do not know whether it is cause or effect. It may be a condition associated with hysteria.

(5) During the hysterical attack begin by relaxing the muscles along the spine, applying strong inhibition in the cervical region, followed stimulation of the Superior Cervical Ganglion and in some cases, if the spasm is severe, rectal dilation; because the Superior Cervical Ganglion on the rest of Sympathetic system through the brain. In rectal dilation on the sympathetic system is stimulated without going through the brain. If the patient is subject to tremors stop them by the forcible articulation of the limbs. If these tremors are spasmodic, use hot or cold applications to the points of the spine corresponding to the limbs affected and use hot and cold, according to the condition of the patient. If there is heat in the area affected, use hot; if cold, use cold.

(6) Give rest cure treatment in severe cases and see that thorough elimination is established through the sweat, kidney, etc.,. If there is mild diarrhoea condition let it take its course. It is eliminity. In any chronic condition, if the treatment stirs up a mild diarrhoea, do not stop it, for the elimination is taking place. In some cases of suppressed menstruation, if re-established do not check if it continues, nature will attend to that.

(7) In chronic cases remember that mental as well as physical treatment is required. The kind called for must make the patient get control of herself. You must use just what is the best way. You must teach them their own dependence. This is the one field of damage in hypnotism which tends to destroy independence.

(8) Use freely cold sponge bath to body and spine particularly followed by friction, using rough towel or flesh brush, also take physical exercise generally in the morning.

(9) Limit food at first. They generally are over eaters. Limit to absolutely digestible food, easily digested. Some severe cases use predigested food, but not unless there is also neurasthenia. Diet from the standpoint of nervous diseases, the easily liquified fats and proteins and a minimum of carbo-hydrate. If they will not take fat use it outside, rub in olive oil. Olive oil will go almost direct to the liver. Best time to take the oil is before meals.

Vasomotor Neurosis.

Sometimes called Raynaud's Disease. Here we have condition of degeneration or localized gangrene of tissue in the fingers or toes caused by a vasomotor disturbance. There are three stages in the development of this condition.

(1) A local syncope, caused by exposure, e.g., to extreme cold, as in frost bites, also by severe irritation, e.g. some cases where there are very white fingers from contraction of muscles and ligaments at shoulder or spine.

(2) Local Asphyxia.

Applies principally to the fingers and toes, caused by the lack of oxygenation of the local blood supply. You get this in rheumatism and goit. The soft subcutaneous tissue becomes so hardened that there is no longer interchange of oxygen in the blood.

(3) Gangrene

This takes the form first of small white spots superficial with great pain, followed by loss of sensation, a condition that results from cutting off the blood supply e.g. last stage of death by pneumonia, which is a stage of gangrene and causes the peculiar odor, also a typhoid fever, in the intestines. Cause of it is a vasomotor neurosis. According to Raynaud there is a vascular spasm in the minute arteries, resulting in the stoppage of circulation. This is a good explanation osteopathically.

Treatment

In a Vascular Spasm consequently we look for lesions in the Vasomotor area, corresponding with the part affected. In treating the condition give;

(1) General vasomotor treatment in the entire vasomotor area of the spine, 2nd dorsal to 2nd lumbar,

(2) Thorough articulation in the vasomotor area corresponding with the part involved.

(3) Manipulation of the limb affected beginning as near as you can to the point of the neurosis, then manipulating upward to the junction of the limb with the trunk and then backward again - because the small arteriole system in spasm treatment of the part, relieves the spasm. When you stimulate the arterial blood supply you get a vasomotor effect.

(4) Keep the patient warm and make him wear something warm like flannel over the affected part to keep up the superficial heat.

(5) In severe cases immerse the portion affected at blood heat. (This applies to superficial parts, as a hand or foot). Arrange to have the affected member in a vessel and the solution at a desired temperature, turning the cock so that a steady gentle stream flows over the affected part. This must continue as long as

needed until between the treatment and the antiseptic solution the part assumes the normal condition. This may be for days.

Thermal Neurosis.

This is a neurosis resulting from a prolonged exposure to excessive heat. There are two types of this condition;

(1) Sunstroke. This produced directly by exposure to the direct rays of the sun, especially where there is a moist or sultry atmosphere. It is probably that this thermic fever is due to direct absorption of the rays of the sun into the blood with the result that the heat acts directly on the nerve centers, first irritating and then practically inhibiting the action of the centers, producing paralysis of the centers.

(2) Thermic fever or Heatstroke, so called.

In this case there is a long exposure to a high temperature exaggerated by physical exertion or excessive physical energy, not the direct absorption of the heat rays, at least alone, it is the absorption of the heat and its combination with the heat and energy of the body. In this case the effects are superficial through the vasomotor system. Paralysis when it takes place is on the surface of the body, hence the surface is cool. The pulse is small on account of the constriction and it is also rapid. Rigor Mortis or its Thermologus Thermic Rigor may develop. The internal organs in this case become congested, e.g. cerebral engorgement; liver engorgement; constriction of the left ventricle dilation of the right ventricle and the dilated ventricle filled with the dark venous blood. The center of the neurosis in this case is the medulla, the great vasomotor center which becomes paralyzed. In Thermic Fever the heat centers are paralyzed, more heat being produced or received than is thrown off, hence the surface of the body is warm. Thermic fever may come on suddenly or gradually.

The first symptoms are - pallor, headache, (congestive) followed by fainting, restlessness of the body, struggling and collapsing from exhaustion. In most cases it comes on suddenly, the temperature of the body rapidly going up to high point, 113 114 degrees not unusual and with this temperature there is tendency to apoplexy.

Treatment of Thermal Fever. In the simple Thermic Fever we find lesions in the cervical or upper dorsal regions. The main point in the treatment of simple thermic fever is to keep up the blood circulation and establish the elimination through the sweat and urinary organs, etc. Give the patient warm drinks so as to establish some action in the gastric-intestinal field, then in the circulation and sweat field.

In sunstroke and heat exhaustion.

- (1) Place the patient in the recumbent position, loosening all garments around the neck and chest.
- (2) Stimulate the heart action (a) by inhibition of the tenth cranial nerve; (B) by stimulating the sympathetic system at the superior cervical ganglion region. (c) by inhibiting the tenth cranial nerve in connection with the sympathetic branches at the fourth and fifth dorsal on the left side.
- (3) Stimulate the superficial circulation by relaxing the muscle in the neck, downward to the fourth and fifth dorsal, then stimulate the vasomotors in the neck, the sympathetic system as a whole by rectal dilation and the general circulation by rotation and extension and flexion of the arms and legs. When the blood circulation in the lower half of the trunk and legs is weak, apply the ligature principle, placing the ligature about the middle of the upper half of first one leg and then the other leg each for fifteen minutes, increasing the time until you get it up & half an hour. This is good if there is a tendency to paralysis in the lower limbs.
- (4) In case of collapse place the patient in the hot bath, gradually adding cold water until the water becomes cool. Apply the ice pack to the head, over the forehead of patient until you get control of the superficial capillaries. In applying this ice pack, apply gradually, first a few seconds and remove, and so on until the head becomes accustomed to the cold, else you may cause a clot.
- (5) If the stomach of the patient is full produce vomiting by inhibiting at the fourth, fifth and sixth dorsal to relax the cardiac end of the stomach and at the same time stimulate the sixth and seventh dorsals.
- (6) Give vigorous stimulating treatment to the spine and over the abdomen. Stimulate the respiration if necessary by using artificial respiration.
- (7) Give only liquid food and give it frequently to try and keep the blood down from the head, or the head from becoming congested. Treat along the neck and over the scalp for the same reason.

SEXUAL IMPOTENCY AND STERILITY.

This is, except in cases of anatomical malformation a functional nervous condition. The symptoms are those of neurotism, melancholy, sexual depression and debility. Lesions maintaining this functional neurosis are found in the lumbo sacral regions, the innominates and the soft sacral pelvic tissues.

In the treatment attention is directed chiefly to the lumbar and sacral spine, sometimes the lower dorsal and the ribs in this region, correcting the

lesions found.

1. Give the patient a general treatment to tone up the system, stirring up thoroughly the blood circulation.

2. Patient on the face, with your thumbs press the muscles on either side of the spinous processes upward and outward, then use the cushion of the flat of the hand to do the same thing, get thorough muscle relaxation.

3. Patient still on the face apply strong pressure over the sacral region while you pull up the limbs backward.

4. Manipulate the prostate gland in the male, per rectus. Along with this relax the iliac fossae on both sides. You reach the genitoprural and inguinal glands here.

Diseases of the Brain.

This includes diseases of the brain substance proper and the meninges of the brain. The brain depends entirely on the meninges for blood and peritalsis.

Pachymeningitis. Here there is an inflammation of the dura mater. There are two types, the external and internal.

(1) External. Here there is an inflammatory process in the external layer of the dura mater found in connection with traumatic and syphilitic conditions of the head, toxins resulting from diseases of the middle ear. In syphilitic type there is always a thickening of the membrane and inner table of the skull or sometimes these are closely adherent.

Symptoms. Among the symptoms we find intense pain with delirium chills and fever, convulsions, always associated with pressure symptoms, e.g. paralysis involving the cerebral cortex and motor paralysis involving the area corresponding in the cerebrum.

(2) The internal type involves the inner layer of the dura mater and is produced by injuries to the head, affecting the brain substance or cranial bones injuring the cranial bones. Sometimes it represents a chronic condition secondary to alcoholism, syphilis and sometimes to the infectious diseases.

Morbid Anatomy. There is hyperaemia of the inner portion of the dura mater followed by exudation resulting in the formation of new substance really representing a new membrane. The new substance organized by the formation of a new blood vessel system through its substance. Sometimes this substance exuded passes right through the substance of the pia mater and through onto the cortex, producing pressure and apoplectic conditions. We commonly find convulsions and it is often found in the male sex after fifty or fifty five years of age. The starting point is an

tonic condition of the blood vessels. Among the symptoms we find the symptoms of cerebral pressure, persistent headache with insomnia; oedematous conditions involving the eyes and ears. It may cut off hearing altogether, or it may produce a watery discharge from the ears or eyes, or cheesy discharges in the syphilitic type.

Meningitis. Here there is an inflammation of the pia mater, congestion and oedema of the arachnoid, exudation taking place between the pia and dura mater, but we may occasionally take place into the brain substance, but here it will pass into cerebritis. It is found principally in young children and the early period of adult life, particularly in those who are susceptible to brain congestion or are not properly nourished for the development of brain tissue. Sometimes it is the result of an infection from some of the infectious diseases, e.g. pneumonia, measles, also secondary to diseases of the cranial bones, hereditary syphilitic involving the vertex portion of the pia mater or both vertex and basal areas. The starting point is a hyperemia or vasomotor disturbance. Following this we have an infiltration of the membranes, then exudation, the adhesion from coagulation, the pus formation, the pus tending particularly to form in the cells toward the ventricles of the brain.

Symptoms. Here we have a headache, always of the frontal type, intense paroxysms aggravated by light, sound, heat, (not cold) causing nausea and vomiting, sudden delirium and convulsions, muscular rigidity of the muscles of the neck and the back, tending to arch the back backward. Neuritis has an affinity for the optic nerve, producing an inequality of the vision or of colors. There is a tendency for the head to move from side to side, or backward and forward, showing an involvement of the cerebellum. In fatal cases there is gradual collapse of the patient. In the non sudden cases we have the intermittent condition, at times worse, then better. Also facial spasms tending toward paralysis and liable to remain as a permanent condition unless it is overcome. In the chronic type the condition is nearly always associated with alcoholism, syphilitic complications or stomach disturbances of the toxic type.

Treatment.

(1) Remember that the blood supply to the brain and the cerebro spinal fluid supply act in opposition to one another in the peristaltic movement of the brain and in the fluid circulation.

(2) That the two points are the circle of Willis and the solid cranial vertex. The Circle of Willis is the starting point of the blood movement and the inner table of the vertex the point of solid resistance in the roof of the cranium tending to check the blood and drive it downward and backward,

(3) Drainage from the brain must take place either through the lymph cerebro spinal fluid or the venous blood. Each one can be used and the main point is to use the principle of opposition and counter action e.g., in the venous engorgement, drain through the lymph or cerebro spinal fluid or both; if arterial engorgement, drain through the venous blood establishing coordination, relieving the brain without causing any sudden shock to it. In all brain diseases the principle treatment is to be applied to the neck, so as to make the arterial and venous circulation to and from the brain normal or as near as possible to normal, sympathetic.

(2) Stimulation of the sympathetic system in the cervical and upper dorsal regions to reach the brain through the vasomotors. The peristalsis of the brain acts through the heart and lungs and vasomotors, but the control is exerted by the vasomotors and this explains why so many reflex headaches are vaso-motor.

(3) Rotate the head and neck to stretch the muscles and then manipulate the muscles downward from the occiput.

(4) Raise the arms of the patient above the head while applying strong pressure in the interscapular area between the spinous processes and the scapula.

(5) Strong inhibitory treatment in the great vaso motor area.

These five points are used in all diseases involving the brain and these conditions call for treatment often, say every four or five hours, especially in bad cases.

In Meningitis, in addition to the foregoing five points--

(6) Give the patient absolute rest and treatment to overcome the insomnia and restlessness. Occasionally it may be necessary to use an anaesthetic, e.g., chloroform, to keep down the intense irritation induced by the restlessness.

(7) Use the ice pack over the head (forehead and vertex) at the same time keep the lower part of the body warm.

(8) If there are symptoms of pus accumulation have recourse to surgical means for drainage and if needed at all it must be done quickly.

(9) Pay attention to the treatment to the digestive tract, give only liquid diet and give often in small quantity. In febrile conditions the nutritive substances are rushing so rapidly through the centers of metabolism that there is a waste and the nourishment is not received by the body.

Heart failure in many diseases having syncope is due to lack of nutrition.

(10) In treating the meningeal diseases one of the most difficult things to deal with is insomnia, or a somnolent condition. These conditions represent a symptomatic condition, due to the agitation or disturbance of the nervous system as a reaction from inflammation, toxæmia, etc.

In most of these cases we find a lesion that keeps up this condition of irritation, viz. an atlas or axis lesion, sometimes lesion involving the third and fourth cervical vertebrae, the seventh cervical and first dorsal, or the third and fourth dorsals. In all of these lesions except the first (atlas) the disturbance takes place through the sympathetic or vasomotor system. This means that in the atlas or axis lesion we are most likely to find hyperæmia; in the other lesions anemia. In the latter case there is a direct interference of the sympathetic system, making the tendency so great to optic neuritis. Sometimes there is a direct pressure on the arteries and in some cases a thickening of the muscles and the sub occipital tissues, e.i. the scalp tissue as it comes up from the neck to the head.

Treatment for Insomnia.

(1) Remove all causes or conditions known to be productive of the condition, not only lesions, but may be environments, etc., e.g. in Photophobic conditions exclude the light. Some colors are soothing to the eye, blue being the most soothing (Azure Blue) Red is exceedingly irritating. Dark or black exclusion of the light is detrimental.

(2) Give thorough general treatment for equalization of the blood.

(3) Place patient on the face, if possible, and apply strong pressure between each transverse process close to the spine, beginning in the cervical region, then

apply vibration on either side of the spine downward.

(4) Patient on the back follow the above by inhibitory vasomotor treatment in the neck, i.e. the superior cervical ganglion region.

(5) Make the patient breathe deeply, then breathe quickly for a few times. This is a lesson taught from anaesthesia, to take anaesthetic quickly breathe quickly and deeply. In thus hypnotizing into a sleep this is true then let them relax entirely and let the breathing drop down to its minimum.

(6) Apply strong inhibition over the upper dorsal centers, followed by deep pressure behind the ears and occiput. In many cases sleep can be induced in this way, first relaxing the tissues behind the mastoid process, followed by pressure toward the lower point of the mastoid process.

(7) Treat lightly from the center of the forehead backward over the center of the face toward the angle of the jaw and then backward from the center of the forehead toward the temple region, then lightly over the vertex. In a small child this will induce sleep.

(8) If there is cerebral congestion apply deep inhibition over the pit of the stomach, deep enough to inhibit the solar plexus, and continue the pressure down over the abdomen and with this give the same time the treatment at the vertex of the head.

(9) In anemic conditions of the brain treat the liver kidneys and stomach, stimulate thoroughly the lung while the patient breathes deeply, causing the anemic condition of the brain to react on these organs producing sleep.

(2) Of the Cerebrum.

Hyperaemia of the Brain. This is only a symptom representing an abnormal increase in the volume of blood to or through the cerebrum. There are two types, Active and Passive, active in the arteries and passive in the veins.

Active. In this type there is an involvement of the arteries, resulting from prolonged mental activity, excessive exertion, continued use of alcohol, excessive use of nitro glycerine as a heart stimulant. This drug is accumulative and tends to accumulate in the cells of the brain. Also in sunstroke and in increased heart action of any kind, especially in hypertrophy of the left ventricle, excessive eating and drinking; mechanical pressure of the abdomen.

Passive Type. This represents a congestion of the brain nearly always secondary to some local obstruction to the return flow of blood to the brain, e.g. tumor of the brain; emphysema; dilatation of the right ventricle of the heart.

The active type has no morbid anatomy. In the passive type the vascular substance of the brain is

increased and the brain itself becomes reddened on account of the exuded fluid; also there is an increase of the subarachnoid fluid.

Active Type symptoms. These are dull headache, flashes of light before the eyes, sluggish mental condition, signs of obstruction either in the form of pressure or paralytic symptoms, drowsiness and dizziness and tending to pass into stupor and comatose conditions, obstruction andocarditis, weak heart action, cold sweat on the skin, the gray and white matter of the brain becomes pale and there is an absence of blood or deficiency in quality. In the former type there is a dull heavy stupor condition, in the latter case a toxic headache associated with symptoms of irritation, aggravated symptoms in connection with the eyes or ears which are sensitive to light or sound or any other irritant.

Treatment of Hyperaemia.

- (1) Give general treatment to equalize the circulation over the entire body (very much same as in insomnia).
- (2) Give strong inhibitory treatment in the cerebral area of the spine, viz. The upper and middle cervical in order to influence by controlling the nerves which regulate the blood vessels that supply the cortex of the brain (i.e. the pial Arteries). This inhibition is given to lessen the amount of the blood in the brain and to cause dilation of the blood vessels in the body.
- (3) Correct any lesion found maintaining the hyperaemia.
- (4) Keep the head slightly elevated and apply warmth to the feet and cold to the head.
- (5) Stimulate the action of the stomach and kidneys (practically) the systemic circulation.
- (6) Look to the condition of the first and second ribs, and if the hyperaemia still persists apply steady pressure over the vertex and forehead and to the subocciput pushing backward onto the sub occiput. At the same time give strong stimulation in the splanchnic area, viscero motin and drawing the blood away from the brain and head.
- (7) Give the patient liquid food very frequently to keep up the strength and nutrition.

Treatment of the Anaemic Type.

- (1) Put the patient on the back, head slightly depressed. If a severe case keep in this position for some time.
- (2) Give strong stimulation in the cervical region of the spine by extension and rotation of the head and neck and manipulate the muscles of the neck close to the spinous processes.
- (3) Put the patient in a sitting posture and with your thumbs between the spinous and transverse processes of the seventh cervical and first dorsal apply moving pressure outward and upward while you rotate the head and neck. Place one hand over the vertex and the thumb

of the other hand in the process and rotate the head. If the head is tight rest the head in your arm and rotate with arm, sometimes giving extension at the same time. Place your arm with elbow at chin and around neck and extend the neck while rotating. Continue this treatment from the seventh cervical down to the sixth dorsal or eight dorsal, taking in the whole of the thoracic visceral field.

(4) Apply strong pressure to the interscapular region by raising the arm over the head, bringing it backward and downward, also apply stimulation to the third, fourth and fifth dorsal area. This is best applied with the knee while raising the arm over the head.

Oedema of the Brain.

Here there is an accumulation of the cerebro spinal fluid in the subarachnoid space and around the pia mater and in some cases in the substance of the brain itself. This is commonly associated with or secondary to mitral stenosis, sometimes it represents a dropsy of the convolutions of the brain. This is a venous oedema. In the native type it begins with a hyperaemia and frequently is associated with the lesions in the cervical region. Then we have the subarachnoid spaces filled with a fluid while the brain substance becomes anaemic by compensation. The ventricles of the brain are filled with fluid. In the passive type there is a hyperaemia followed by infiltration of the brain substance with the primary causing condition, e.g. mitral stenosis or hyperaemia. Then later on when the oedema is established there will be convulsive symptoms, pressure symptoms or paralysis.

Treatment.

If it is associated with heart disease give stimulation to the heart itself. In this case there is a mitral stenosis, and constructive condition involving the valve. If it is associated with the kidney give direct treatment to stimulate the kidneys.

(2) Give treatment designed to lower the blood pressure in the rest of the body. This can be done in several ways (a) by inhibiting the vasomotors in the neck area; (b) by stimulating the general circulation of the entire system, (c) Through the depressor nerve, reacting on the vasomotors, as in (a) This nerve is accessory to the tenth cranial and the case where the treatment (c) is called for is where you have oedema secondary to heart diseases or in mitral stenosis. The depressor nerve is the more accessible where the tenth cannot do enough. Stimulate the depressor nerve by articulation at the head of the first rib. You get first an effect on the abdominal blood vessels through the splanchnics; second, an effect all over the peripheral system through the vaso dilators.

(3) Relax the muscles of the neck, raising the clavicle and the first rib, in order to free the venous blood and to assist the return flow of blood from the head.

(4) In aggravated cases apply the principle of ligature to the lower extremity.

Encephalitic.

Here there is an inflammation of the brain substance, either primary or secondary to inflammation of the muscles. It is caused by traumatism, such as falls, blows on the head, fractures or extension of some neighboring inflammatory process into the brain e.g. caries of the temporal bone; otitis media, sometimes the condition is secondary to some suppuration in other parts of the body, e.g. hepatic abscess; also may be due to endocarditis and is sometimes secondary to infectious diseases. If it follows otitis media we always have symptoms of mastoiditis. If it follows pyemia, injury or abscess there are septic symptoms.

Morbid anatomy.

It may be large or small, single or multiple. In acute cases it is generally diffused over the entire brain (cerebrum). In chronic cases it becomes encapsulated. Sometimes there are separate abscesses in other cases the pus becomes infiltrated in the brain. The most common part to be involved is the temporo-sphenoidal lobe, because of its proximity to the ear. Pus may accumulate in the ventricles.

(For treatment of Encephalitis see that of Cerebral abscess and tumor).

Morbid Anatomy. Cerebral Abscess. Here we have single or multiple abscesses of the brain. The symptoms depend on the seat of the abscess and the nature of the pus that is found in the cerebrum. In the average case brain abscess follows inflammation, consequently we have symptoms of febrile temperature, headache, delirium, convulsions and comatose conditions. In chronic cases we get an intense headache, vomiting and mental impairment. In acute cases it is sometimes associated with or secondary to meningitis in which case you get meningitis abscess symptoms. From conditions of the ear we get throat and ear symptoms and headache. Then we find a series of symptoms typical of suppuration, e.g. (1) increase of temperature with sudden fall to sub-normal temperature; (2) chills or rigor; (3) sweat. If cerebral symptoms develop accordingly after a latent period, either from rupture of the abscess or softening of the brain, then we get apoplexy. When the abscess is found in the sphenoidal area we have aphasia and deafness; if in the occipital regions we get eye symptoms. In the cerebellum there is vomiting and loss of co-ordination of the motor areas, convulsions and paralysis.

Cerebral tumors. There are found most common in the male sex and are secondary to or associated with tuberculosis, syphilis or some form of malignancy. If tubercular it is associated with the early half of life, if

syphilitic in the latter half of life.

One very marked symptom of cerebral tumors is optic neuritis associated with headaches and generally accompanied by vomiting, vertigo and mental weakness. The headache is persistent with paroxysm at times. This may be traced to increased blood in the brain. Another symptom is insomnia from the headache, also temporary paralysis and cramps. In some cases the tumors become unencapsulated and retain latent for a long time, especially in this true of one associated with tuberculosis. When this tumor becomes encapsulated you have a slowing down or parietic symptoms muscular action. In other cases the tumor will act as an irritant, particularly at certain periods, causing epileptic fits. Another condition in an unencapsulated tumor is the retraction of the arm, moving around posteriorly.

Treatment of Encephalitis. Tumors and Abscesses of the Brain.

The condition we have to deal with here is that which maintains the abnormal condition of the blood.

(1) If these are associated with definitely localised areas of the brain, the only treatment that can be applied is surgical (trephining) removing the abscess matter, the encapsulated tumor or the single inflamed area.

(2) In order to prevent the development of these treat the original conditions that act as exciting causes e.g. inflamed abscess of the ear, heart diseases, etc.

(3) In cases of inflammation of the brain either with or without abscess, equalize the circulation of blood by treatment in the cervical region, relaxing contracted muscles and stimulating the blood circulation through the sympathetic system.

(4) Apply extension and rotation to the head, neck and spine.

(5) Raise the arms and clavicle and keep up this arm and the clavicle treatment so as to maintain the free circulation of venous blood.

Hydrocephalous.

Here there is a chronic accumulation of fluid inside the cranium. This is found either in the ventricles or underneath the dura mater.

There are two types (1) the internal types; (2) external type, internal or external to the dura mater. The external is found exclusively as a hereditary condition. In the internal type we have two sub types (1) Congenital, congesting at or just before the period of birth, the large head being an impediment during birth. This probably associated with some deficiency in the fluid drainage from the brain or inflammatory condition of the matter of the ventricles. In that primitive ventricles are all one. In this case there is a large head and protruding eyes, large open fontanelles, thin cranial bones, a very large excess of fluid with an abundance of albuminous or nucleo albuminous constituency. We also find excessive vascularity of the choroid plexus and this is one of the pathological evidence of the origin and the secretion of the cerebro spinal fluid in the

choroid plexus. There is generally imbecility and the disease gradually progresses from the time of birth to the child's death from three to five years of age. In some cases the child lives to adulthood but the hydrocephalic condition is chronic.

(2) Acquired. This occurs after birth and is generally associated with inflammatory condition in the walls of the ventricles or tumors either in the ventricle of the brain substance or at the base of the brain pressing on the vein of Galen. This second type is nearly always secondary to some meningeal disturbance, e.g. following cerebro spinal meningitis convulsions would be found while the congenital type stuporous and loss of control of the nerves or arms. In some cases the head after five or six years becomes smaller, the enlarged head gives place to because the brain substance is diminished and there is a free circulation established through the lymphatic system. If the patient lives we find a great tendency to enlargement of the body, not so much in the way of dropsy but in formless muscles. One case cited the head had so atrophied that it was in size that of a new born infant, while the body was that of a man. The strange feature of his case was the remarkable intelligence of the individual.

Treatment of Hydrocephalus.

Lesions are principally in the middle cervical region causing an obstruction to the blood. Secondary to this there is thickening of the nervous system and sometimes an abnormal development of the genital system, e.g. abnormal menstruation in a child and similar abnormalities in the male. This one argument for the close relation or correlation between the cerebro spinal fluid and the secretory function of the genital organs.

Among the other conditions are highly contracted muscles of the neck with retraction of the head.

(1) First relax the muscles from below upward beginning in the dorsal region and working upward to the sub occiput.

(2) Keep the clavicles free and articulate the first and second ribs and corresponding the first and second dorsal vertebrae corresponding to keep the venous blood supply freely moving and the vertebra circulation free.

(3) If the head remain open the cranium expanding and the brain protruding use the adhesive bandages would tight around the head (plaster casts are dangerous) If any symptom of pressure develops remove at once if temporary, you may get convulsions or delirium as a symptom; if passed the convulsions it is too late.

(4) Keep the intestines and kidneys open, stimulate the splanchnic area to keep the blood well down in the abdominal area (articulate)

(5) A cerebral pressure is developed the only method of relieving when osteopathic treatment fails is by spinal puncture (surgical). The point is between the third and fourth lumbar vertebrae, puncture by use of the needle right into the subarachnoid sac. The cerebro spinal fluid is liable to coagulate, if it does so in the cranium nothing can be done. The puncture in the cranium cavity will never close; in the lumbar area there is a sac to take the fluid an elimination can be kept up until the cause is removed. Your best method is to relieve pressure of the cerebro spinal fluid wherever it occurs, e.g. in erysipelas, articulate in the upper lumbar region or this same puncture region and affect by articulation the same sac you puncture. Always try to articulate first and if it fails then puncture.

(6) Give general treatment to keep the blood thoroughly circulating. Give easily assimilated diet and as little fluid as possible. Use predigested food.

In Hydrocephalus you require frequent treatment even if there are no acute symptoms treat every day. If pressure symptoms treat every five or six hours. Disseminating Sclerosis of the Brain, in Children.

Here there is chronic degeneration of the brain found before middle life in the neurotic. Morbid Anatomy.

We find sclerotic patches in the brain and the nerves terminating or originating in the brain. Cause; Is probably a derangement of nutrition caused by obstruction of the blood vessels secondary to some of the infectious diseases and of some of the brain diseases. The cerebrum, cerebellum, ganglia, medulla and even the spinal cord are involved. Patches are grayish red and very hard, solidified connective tissue, the watery fluid part eliminated. It begins in the small nerve fibres and the medullary portion (white substance of Schwann) and passes to the axis cylinder. This represents a chronic condition in which we have as symptoms;

- (1) Loss of control over the upper extremities.
- (2) Increased sensation in the lower extremities.
- (3) Exaggerated reflexes and jerking muscles, stammering speech, nystagmus of the eyes is one of the first symptoms. Chronic Symptoms. Loss of muscular power, followed by atrophy of the muscles difficult respiration and deglutition, the muscles of these parts being involved. It is found principally in children up to six years of age, also in older people running a course of from four to six years. When it runs its full course there may be imbecility, insanity, complete paralysis, etc. It may result from traumatism in the sub occipital region, e.g. from a fall.

Treatment.

This disease represents a condition of malnutrition of the nervous tissue:-

(1) Give special attention to the nutrition of the patient from the dietetic side, with absolute rest in bed. A light liquid diet given often and on the basis of the diet for nervous diseases.

(2) Stimulate the action of the skin and kidneys, using the warm sponge bath over the surface of the body.

(3) Correct any lesions found in the cervical region. Stimulate the cervical and upper dorsal regions as low down as the sixth dorsal and keep the muscles well relaxed in the area. This is the area of the centers of nutrition.

Cerebral Hemorrhage.

Here the substance of the brain is involved, i.e. there is hemorrhage into the brain substance. The starting point is the central branches from the Circle of Willis. The principal point or points affected in the brain by this hemorrhage are the Corpora Striata and the Internal Capsule. This is due to the fact that the largest branches from the cerebral artery pass through the internal capsule. Sometimes the Cerebellum and Lenticular Nucleus are also involved. In other cases it is secondary to the traumatism. Any of the large arteries may be involved, particularly where there is Arterio Sclerosis, Aneurism, Senile Changes, particularly in premature senility. It is found in the cases where in middle life there has been some degenerative disease, i.e. in the female, say, where you have a consumption developing at the age of 40 to 45 years without any premonition in earlier life - a degenerative process in early life.

Also found in very young people, especially those who have hereditary neurotic tendencies, e.g. to Bright's Disease, Syphilis, Gout, Rheumatism, Anemia, etc. Certain families have cerebral hemorrhage as a cause of death during childhood, or some older, 40 - 45 years.

It must not be associated with Bleeder's Disease, much more deeply constitutional.

The lesions are found in the cervical region, the first and second cervicals and the seventh cervical and first dorsal, weakening the cerebral and vertebrae circulations, lessening the resistance of the blood vessels walls from vasomotor side.

The exciting causes are Traumatism, Alcoholism, Violent Exertion and Exercise, Sudden and Violent motion, Convulsions, particularly in the course of an attack of whooping cough.

Morbid Anatomy. Rupture takes place usually in connection with siliary aneurism, which changes the pressure in the blood circulation causing the tendency to rupture. Sometimes it is secondary to sclerotic patches, either in the substances of the brain or the nerves. In some cases the starting point is in meningeal hemorrhages, particularly in anaemia. Sometimes the hemorrhage is

secondary to an inflammatory process, either in the brain or the meninges, e.g. Meningitis.

Symptoms: The onset is sudden sometimes it is insidious and without symptoms. The first are the head symptoms, Dizziness, Fainting, Persistent Headache, Impediment of speech, slight at first. In most cases this change comes on after feeling unusually well. Sometimes it follows overeating and is usually accompanied by vomiting. When associated with the stomach we do not have loss of consciousness, while with the brain we have loss of conscious, also a deviation of the head and face to one side and a cross-eyed condition of one or of both eyes, according to the location of the hemorrhage.

Excessive relaxation of the muscular system all over the body particularly in the neck and chest. This is one reason why respiration is effected.

In some cases we have convulsions, particularly when it is found in a child or a young person. We do not find so great Paralysis in Cerebral Hemorrhage as in Epilepsy, because the conditions lie deeper. In the grown person we may have convulsions from toxic conditions, i.e. uric acid condition for example.

Another symptom is the rotatory motion of the head from side to side or antero-posteriorly.

Sometimes it comes on during sleep and the acute symptoms are absent. If we waken the patient, we find he has paralysis and a jerking movement of the muscles.

If the patient is unconscious there will be an involuntary visceral action of the bowels and bladder. In these unconscious and conscious types these involuntary symptoms are absent, the speech affection is reduced to monosyllabic words. Among the symptoms that appear quickly are those resulting from absorption, i.e., toxic suppuration and there is rapid or very slow pulse or almost entire cessation for the time being, followed by inflammation of the brain and if this takes place there is generally a quick fatal termination. If there is hemorrhage in the internal capsule there is marked hemiplegia involving the face, arms and legs. It may affect both sides, but generally on one side. There may be exaggeration of the deep reflexes with diminished superficial reflexes. If the lesion is in the pons we have convulsions of the muscles all over the body and a secondary motor paralysis. After convulsions side by side with the motor paralysis we get paralysis of the muscles of the eyes.

Infantile Hemiplegia. is the name given to one type. It is sometimes congenial. It is found in a child from birth to four or five years of age, particularly in the first three years of child life, when the brain is rapidly developing. Sometimes secondary to some septic condition. Here we have the common child-symptoms,

convulsions, vomiting, stupor, the child is inattentive, lacking animation, etc. Also there is aphasia. It is always found in such cases and indicates disturbances of the left side of the brain. (the motor control of speech function is on the left side.) In some cases there seems to be a spontaneous cure.

It is not easy to determine such conditions but it is always safe to use the rest cure treatment until you are sure.

In other cases we have a permanent paralysis, first general then limited to one or more particular parts.

Treatment of Cerebral Hemorrhage:

(1) Prescribe absolute rest in bed for patient.
 (2) Place the patient in a horizontal position, raise the head slightly, loosening all clothing about the neck and chest.

Specific Treatment:

- (1) Relax all the tissues in the cervical region and upper dorsal region, giving particular attention to the first and second ribs on the left side, as they are often elevated and interfering with the large vessels lying underneath.
 (2) Apply strong inhibition to the superior cervical ganglia to control the vasomotors to the head and entire circulation of the body. You can assist in this also by rhythmic treatment of the carotid artery (carefully).
 (3) Apply strong inhibition in the sub-occipital region to dilate the blood vessels and to assist in relieving the congested condition and lessen the blood pressure.
 (4) Give general cerebro-spinal and abdominal treatments (inhibitory) to draw the blood to these parts.
 (5) Apply ice to the head and heat the feet, also hot rectal irrigation to start up the fecal excretions and carry off the serum developed in the intestines.
 (6) Stimulate the respiration by raising the thorax and spreading the ribs.
 (7) Apply strong extension to the spine and inhibit at the lower cervical to keep the impulses from passing up to the brain.
 (8) Treat the cervical region to increase the venous circulation downward and help produce absorption of the clot. Apply massage first to the paralyzed muscles and stimulation to the corresponding areas of the spine.
 (9) Correct the specific lesion of the case, which is most commonly a lateral and anterior first and second cervical vertebrae.
 (10) Give attention to the secretory and excretory organs, treating these from the spinal areas.
 (II) Articulate the upper dorsal region well to prevent all reflex conditions from developing.

(13) Treat the heart and kidneys to keep down the pressure of the blood. Give light liquid diet and if necessary predigested food for a time.

Embolism. Here we have vegetation, produced by certain diseases of the heart valves, e.g. Endocarditis, disease of the left ventricle, anaemia, alcoholism, atheromatous conditions. Most common in the female sex in the early part of middle life. The emboli enter the left carotid, passing along these to the middle cerebral artery.

A modification of embolism is Thrombosis, in which we have clots formed in the vessels, usually from some traumatism in the walls of the vessels. It may be primary at the point of formation or secondary to a previous emboli. The traumatism causes a destruction of the integrity of the intima and a liability to develop coagulation - thrombus. Some claim it is not possible in the minute arteries of the brain, but that is only a theory. Post Mortem examinations have given a pathological demonstration of the formation in the brain blood vessels.

The primary cause is an arterial degeneration. The predisposing cause is a weakness of the heart, thrombus. The thrombus is usually found in the middle cerebral and in the Basilar arteries. Sometimes it is found in the vertebral arteries. Sometimes found in the venous system in the longitudinal sinus field and internal jugular, but limited generally to the atheromatous condition.

Symptoms. Among these are tendencies to hemorrhage, e.g. in connection with epistaxis, stomach, intestinal and uterine hemorrhages, dizziness, headache, dull headache with boring pain at the site of the embolism; sometimes loss of consciousness when it reaches the hemorrhage stage. It is found generally after middle life. The onset is sudden with more or less apoplectic symptoms. In most cases the premonitory symptoms are slight headache with loss of control of mental and nervous functions.

Treatment. Give the patient absolute rest in bed, This is the first and most important thing. Elevate the head slightly.

(1) Relax the muscles down along the spine.

(2) Stimulate the action of the heart. Treatment for this is applied principally from the sympathetic side, e.g. articulation of the third and fourth ribs on the left side and treatment to the sympathetic system upward from the lower part of the spine, beginning with rectal dilation.

(3) Keep up the action of the intestines and kidneys in order to eliminate the serous elements from the blood also to increase the fluid urinary excretions. There is an excess of solid elements in the urine. In all these cases you will get thick heavy urinary deposits.

(4) Stimulate the general body processes and give patient only liquid food in small quantities and at frequent intervals. If patient wants more give solid

dry food as crackers, to absorb any serious element in the intestines.

(5) Treat in the cervical region to increase circulation of the blood in this region and to lessen the tendency to coagulation of the blood.

In this case there is an increase in the pressure of the blood while in hemorrhage there is a decrease in pressure which favors coagulation.

(6) Give the patient at intervals water to drink to increase the blood pressure.

(7) Do not stimulate the sensory system any more than you can help, because the over stimulation will produce reflex irritation in the stomach, intestines or heart and favor another attack.

Aphasia. Here there is an inability to use language. This means a loss of expression of the power to express ideas vocally. You may have or both of these even a sign language being impossible. There are many types, the most common being

Ataxic Type, in which there is inability to make combination of sounds to express ideas. This is the reason why in cerebral hemorrhage the patient can only use monosyllabic words, as yes and no.

Amnesic Type. This represents the inability to recall sounds (words) when needed to express ideas.

Agraphic type, which represents the inability to put sounds into writing. This is typical in aphasia and apoplexy, even when the apoleptic condition has been overcome. The foundation of this type is an incoordination in the nerves.

Aphasia is not a disease, but a condition, found in the course of other diseases, e.g. Hysteria, Epilepsy. It is prominent in cerebral hemorrhage, cerebral abscess, softening of the brain.

Lesions are found in the left middle cerebral artery, involving the Island of Reil and associated with the speech coordination of the Corpus Striatum, particularly on the left side. Hence the condition is usually an external one -- external to the mental processes with no impairment of the intellect.

Treatment. General treatment in the upper cervical region is called for to overcome the blood

extravasation that involves the minute terminals of the nerves in connection with the center of speech, causing an incoordination of nerve action. To reproduce the coordination drain out the water in the form of serum lymph from venous blood. do this (1) By thorough vaso motor treatment in the upper cervical region.

(2) By extension and articulation of the neck, clavicular and sternal structures.

(3) By strong extension to the spinal column.

(4) Retation and extension of the head and neck, followed by pulling and phsing of the head and neck anteriorly, patient on back. This is the best way to establish drainage.

Vertigo. Here is a condition in which the equilibrium of the body is interfered with. This interference may exist on the purely nervous side or in the

muscular system. The muscular sense is largely the foundation of the equilibrium of the body. These muscular sensations when interfered with explains why we get unstable equilibrium in locomotor ataxia, the lesions being on the muscular side.

There are many types, the most common being the Ocular Type involving the eyes. sometimes this is evidenced by symptoms of eye strain, which may be secondary to the muscular sense. You require to trace up this condition through the Artyle Robertson pupil in locomotor ataxia. Aural Type is associated with some portion of the ear. It is generally the result of a hemorrhage effusion or discharge of pus in abscess of the middle ear. It is generally the result of a hemorrhagic effusion or discharge of pus in abscess of the middle ear. The most common type is the Gastric type, which is found in children with worms and in toxemia and gastric intestinal and enteric conditions. Some claim that it is explained on the basis of catarrh, causing lack of normal stimulation to the sensory fibres in the stomach wall, or loss of sensation through catarrh or worms, or toxins. Others say it is to be explained on the basis of acid or toxic accumulations in the blood. You must look for the cause in connection with the brain circulation. It is primary in the stomach but the field of the inhibition is in the brain circulation. In uric headache we have no typical vertigo so this assertion is not applicable.

Nervous Vertigo. This is associated first directly with the tenth cranial nerve. Its primary function is sensory. It has other functions through its connection with other nerves. A lesion involving the tenth cranial nerve the afferent primary trunk of the nerve, results in vertigo. The reason why the tenth cranial nerve has connection with so many conditions is because it is sensory. All sensory nerves pass through the sympathetic system to the sensoryum. This is the reason why we get superior cervical ganglion lesions in stomach, uterine and other such troubles.

The splanchnic nerves are primarily motor but may be inhibitory through some connection. Osteopathy gets the best results by considering the primary function of the nerve, then tracing its modification through some connection.

There is a type of Vertigo found in connection with Migraine. Here it assumes a particular form. It is not so much the dizziness of the patient as the dizziness of the environment of a patient, i.e. the objects seem dizzy. It comes from lack of control of the cerebro spinal system is not strong enough to concentrate the optic apparatus on the object looked at. In cases where the patient complains of feeling as if the brain is turning over, there is a vasomotor vertigo, i.e. an

unbalance of all the medulla centers, accompanied by vomiting or incontinence of urine and feces and affecting all weak organs.

The gastric type is associated with a whirling sensation. The center of the whirlpool is the center of gravity line of the body around which all parts whirl because the incoordination is in the spine.

In some of the types the feeling of rotation of the head is present. Here there is involvement of the basal ganglia. Physiological experts show that if one side of the cerebellum or crura in a Pigeon is injured it tends to rotate over to the side of the injury. The crura represents coordination of motion.

Treatment of Vertigo. The main point is that it is a nervous incoordination whatever may be its irritating cause. The special line of treatment must be a coordinating line of treatment.

(1) A good general treatment to equalize the circulation of the blood. This includes treatment to the spine, limbs and extension treatment to the spine.

(2) Coordinating treatment to the spine by articulating from above downward in all cases, except when you have muscular incoordination in which case you articulate from below up, as in locomotor ataxia. You can apply the same principle in other field, e.g. psoas abscess. You can heal the surface and leave the deep fistula still open, or treat at the highest point which it has developed and then treat downward. Treat at the lowest point if attached treat up and thendown.

In Aural Vertigo.

(3) Pay attention to the condition of the atlas.

(4) Give a general treatment in all cases of vertigo.

Place the patient in a sitting position and apply pressure of the knee in the intercapular region and stretch the spine upward and backward. You must trace out the cause of vertigo. One case was traced to the sciatic nerve on the left side. When pressure was given at the sciatic notch vertigo resulted. The sciatic nerve is a complex nerve, both sensory and motor, and the irritation affected the sensory impulses to the basal ganglia of the brain -- an incoordination of sensation.

ALCOHOLISM.

This is a condition associated with the excessive use of alcohol or any intoxicant, causing an irritation to the brain centers. We place this next to vertigo because it is really a type of vertigo. There are several varieties varying from simple dyspnoea to delirium. sometimes it appears only as a simple toxemia. The slightest form of the toxemia is dyspnoea. This explains why the patient wishes water, for the dry throat is caused by the dyspnoea giving temporary paralysis to the fibres. The most excited form is delirium tremens. In this form the entire brain centers are paralyzed, and the neurone cells are all fighting. In some cases it may lead up to

insanity because of the exaggeration of the
 If this condition is continued for a time no concentration is possible. (Physiologically the neurons calls are isolated from one another giving us a type of insanity.)

The seat of alcoholism is in the brain. It is probably always of an active type, i.e. an active hyperemia. Some way it is a passive venous congestion. There is a suspension of the upward movement of the blood and of the downward movement of the cerebro-spinal fluid. The mucous membrane of the throat and stomach very freely absorbs the alcohol, hence there is an injected or hyperemic condition and this is one reason for the dryness of the throat and the tendency to catarrh.

(2) There is a passive congestion in the catarrhal stage, a thick ropy mucous accumulating on the surface. Sometimes this mucous is tinged with blood. The first organs affected after the throat, stomach and brain are the kidneys. It represents an attempt on the part of Nature to eliminate the toxic elements. The skin is affected in the same way - being very dry, perspiration either being suspended or destroyed. The next organ to be affected is the liver. The Hob nail liver comes from this; also Cirrhosis of the liver an enlarged and engorged liver. (The excessive use of patent medicines may give the same results as from alcohol.)

The liver is engorged or congested or oedematous with a tendency to fatty degeneration, which also extends to the kidneys. Ultimately we find a fatty degeneration and softening of the brain; fatty degeneration of the heart and brain, or sometimes the sclerosis of the liver, kidney, heart and brain. It is difficult to explain this cirrhosis. It may be in some subjects having bulimia (insatiable appetite) that it is associated with, rather than from, alcohol itself - the overeating of proteid food. Look carefully into this alcohol in crisis, say in typhoid fever, but never in fatty degeneration of the heart, when this complication is present.

Symptoms. There is great excitement of the nervous system followed by semi delirium and coma, then there is slow pulse and feeble heart action. The pulse is not always an index of the heart, though the heart action should always be compared with the pulse. If the pulse is feeble and the heart action strong it is a difficult proposition to explain the cause. Loss of control from the involuntary side, e.g. the sphincter muscles, is another symptom. In the delirium tremens stage we find a series of symptoms, e.g. muscular tremors, nervous irritability, mental hallucinations, and physical symptoms, such as coldness and pallor of the skin, which represents vasomotor paresis. In alcoholism in the chronic stage there is one symptom we must pay close attention to viz., the muscular responsiveness, which

is always weak, the reflexes are weak but if you do not get the muscular reflexes do not always think you have locomotor ataxia or tozemia. This is the cause of uremic symptoms, or poisoning. It means that the muscles are not strong enough to carry on the metabolic functions, hence uric acidemia is found. The difference between uremia and uric acid is the difference in dehydration. They differ in method of metabolism. Uric acid is the end produce of rapid as well as incomplete metabolism. Urea is the result of a slower metabolism. This accounts for uric acid in rheumatic conditions. We can overcome rheumatism to an extent by deep breathing. There is a tozemia and in dealing with a tozemia the main point is to keep the toxic products from accumulating and also to eliminate them.

Specific Treatment.

- (1) If the patient is full of alcohol keep him moving, or if unable to do so, keep the circulation moving by Osteopathic means or by heat, in delirium tremens when the body is limp it is best to use the cold bath or very hot bath. Do not use cold in heart condition. The hot water stirs up some of the functional activities.
- (2) Give rectal dilation, at the same time giving strong inhibition in the lower dorsal and lumbar region. The object is to overcome the loss of control in the involuntary system and to coordinate the voluntary with the involuntary with involuntary system. (the first and second lumbar is the point to coordinate these).
- (3) Look after the morbid stomach conditions, stimulating from the spine.
- (4) To overcome the conditions of the brain, i.e., passive symptoms, such as loss of mentality, give strong inhibition over the supraorbital notches, gradually increasing the pressure and gradually pulling the head of the patient backward, at the same time exert strong pressure in the sub-occipital region. This is to be followed by free rotation of the head on the occipito-atlantal articulation. We get a number of effects, especially on the sensory nerve there.
- (5) Stimulate directly over the lower portion of the splanchnic area in order to stir up the excretory functions.
- (6) Give a non-stimulating diet with sufficient food in quantities to lessen the stomach cravings, give a large proportion of indigestible food elements, i.e., food containing fibrous material: you might give raw food wheat, oats, popcorn, etc. vegetables are good. (The same kind of treatment is good in constipation, which will force peristaltic action and not in quantity to force osmotic processes, but forcing excretions by peristalsis.

It is well both in alcoholism and morphine conditions to give patient large quantities of hot water, both to drink and by injection, then lift them onto their feet, letting the weight of the body fall on the feet. this stimulates the muscular sense. Hacking

treatment on the soles of the feet, on the hands, etc. also arouses the muscular sense. Try to eliminate accumulative conditions. This accumulative condition enters into the substance of the brain and here you have to antidote the toxic condition the same as any other poison. Until that is done the patient cannot control the appetite for the stimulant and it remains in the system and controls the action of all the neuronic cells in the brain.

Hyperemia of the cord

Here there is an abnormal fullness and congestion of the meningeal spaces and of the vessels of the spinal cord itself. It is active if the arterial blood is involved, passive if venous blood is involved. Passive hyperemia of the spinal cord is rare. Hyperemia is produced by exposure, arrested menstruation and hemorrhoidal conditions: variations that take place at the changes of life, in the female sex, e.g., puberty and menopause. What some doctors call "Simple Meningitis" at puberty are really in many cases spinal hyperemias and at the menopause what is called "Rheumatism" is often a neuritis, attending the menopause state. Epilepsy is also an auto-intoxication, e.g., cyanide are formed in the system. Hyperemia is also caused by hemorrhoidal conditions. You should look carefully when you have spinal congestion and trace it to find if there is a history of hemorrhoids. If you find they have been in the case, sometimes the hyperemia may be traced to the spontaneous cure of the hemorrhoids. The blood is arrested, resulting in a hyper-venosity or accumulation in the spine. Sometimes it is found after surgical operations for hemorrhoids.

Another cause is injuries to the spine and poisons, particularly those that have an affinity for the spinal cord, e.g. alcohol, strychnine, chloroform and ether. If used in large quantities, chloroform or ether may coagulate the cerebro-spinal fluid. Sometimes the too frequent use of chloroform, e.g., taken at the menstrual period, will have a cumulative effect. In giving remedies for such things, those that have an affinity for the spinal cord should be used, in cases it is necessary to give any. Most iron remedies have strychnine in them and spinal troubles result years afterwards from too much use of such remedies. Cocaine has an affinity for the peripheral nervous system, not the spinal cord. Strychnine accumulates in the heart muscle substance, also in the spinal cord in dynamic form. Arsenic will accumulate in the brain, both in substance and dynamic form and may have a toxic effect twenty years after.

Morbid Anatomy.

It is that of congestion of the meninges and of the spinal cord itself: extravasation of the blood into all surrounding tissues due to the rupture of the vessels. There is an increase of the spinal fluid, always in the serum form, or there is an exudate: there is a bluish

discoloration of the fluid in the walls of the canal.

Symptoms.

There is a feeling of fullness, weight, paraesthesia of the spine, aching of the back, particularly when the back supports the weight of the body; there is an exaggeration of the reflexes and heaviness in the limbs is a strong symptom in spinal hyperemia. The patient is unable to get up and complains that the limbs feel like lead; there is also a tingling in the limbs; tenderness in the muscles of the extremities; the feeling of abdominal constriction. This feeling of the abdominal constriction and the heaviness of the limbs are the two most typical symptoms of spinal hyperemia.

In the active type there is a strong stinging, burning pain and sometimes a feeling as the entire spine were being overstretched. This marks the difference from the passive type, in which we have a dull heavy pain. The motor nerves become actively stimulated by the active congestion.

Treatment.

(1) The object is to free the circulation of the blood to and from the spinal cord. Here an articulatory treatment is not best, because it does not affect the blood as much as the nerves. To effect the blood, it is best to treat the heads of the ribs, i.e. articulating and raising the ribs at the head; for the blood system lies in relation to the superior part of the head of the rib.

(2) With the patient on the back, freely extend the spine, with a slightly rotary movement. This is of value in correcting and to drain away the venous blood.

(3) With the patient on the side, give the patient good muscular treatment, moving the muscles out and away from the spine. This affects the arterial blood and the patient being on the side, will get the assistance in gravity.

(4) Set up an active circulation in the extremities by flexing, rotating and kneading treatment. Secondary to this, use heat locally on the extremities, if the patient is sleepless, and they are usually so, use hot applications along the length of the spine. Here the spinal hot water bottle is best, because it gets to the whole spine at the same time.

(5) Correct all lesions found.

Myelitis.

Here there is an inflammation of the spinal ~~xxx~~ cord substance, either in the acute or chronic form. It may involve

(a) The whole cross section of the cord at one particular segmental level. This is called technically in the books "Transverse Myelitis".

(b) A large section, continuous, of the cord may be involved, for instance, from upper end of the second dorsal to the fourth dorsal. This is called "Diffuse Myelitis".

(c) One small area or portion of the cord may be involved, when it is called "Focal Myelitis".

(d) If the gray matter around the central canal is involved, and not the white matter, it is called "Central Myelitis".

(e) A sub-type of this is called -- if the gray matter in the anterior horn area is involved -- "Anterior Myelitis".

In the acute type of myelitis there is an inflammation following hyperemia, with softening, resulting in marked motor disturbances and secondary sensory and nutritive disturbances. The cause of these types are exposures to extremes of weather, to the infectious diseases, especially if badly treated medicinally. It especially follows small-pox, typhoid fever and measles. It may also be due to direct traumatism or diseased condition of the vertebrae, e.g., caries, syphilitic or cancerous conditions of the vertebrae. It is most commonly found in the male sex from puberty to thirty-five years of age, because the sympathetic system is in control up to puberty and after that the cerebro-spinal system asserts its control. Anterior Poliomyelitis is the most common form, because the anterior horn is in the seat not only of the motor nerves but also the trophic nerves. The exciting cause in the male sex is the fact that boys are often put to hard work at puberty or even before it. (Locomotor Ataxia is purely a sensory condition, involving the posterior nerves and centers, but the motor side is not involved).

Morbid Anatomy.

On section the cord is red stained and soft because of blood accumulation. There is no line of separation distinguishing between the white and gray matter on microscopic examination. Minute hemorrhage is found in little dark spots and is typical of Anterior Poliomyelitis. The nerves are swollen and the axes cylinder of the nerves begin to disintegrate. There is thickening of the entire line of degeneration along the path of the nerve, the cell itself has degenerated.

Symptoms.

Transverse Myelitis is found most commonly involving the dorsal ~~NERVE~~ area. It comes on with febrile symptoms, headache, delirium, rheumatoid pains, from the dorsal spine around the ribs. Sometimes also with gastric symptoms, pain in the gastric area, or it may come on suddenly with convulsions, in children, followed quickly by paralysis, loss of sensation, girdle sensation at the level of the lesion: loss of reflex: atrophy of the muscles: sphincter paralysis: pain in the back radiating down to the limbs: loss of reflex followed by the return of the reflex in exaggerated form. There is also retention of the urine and feces, followed by incontinence: the feeling of weight, numbness and inability to walk: loss of sensibility:

sometimes not sensations with pain localized, very intense at the lesion point. If the lumbar enlargement is involved the reflexes are entirely lost and the muscles atrophied. If it is located above the lumbar enlargement the loss is only temporary passing away to be followed by the exaggerated reflexes. This is the only means of differentiation of the exact location as to whether the lesion is above or below the lumbar enlargement. After a time bed sores and ulcerations develop. In favorable cases sensation returns after a few weeks, followed by spastic paraplegia. In fatal death results from heart exhaustion, respiratory, asphyxiation or some form of kidney disease. The myelitis itself does not cause death, but reaches tropically some other organ, resulting in organic exhaustion.

In the Diffuse type we have similar symptoms involving different areas at the same time. It comes on suddenly with febrile symptoms, absolute paralysis and is usually fatal very quickly unless something is promptly done for the patient.

In the chronic Type the limbs gradually lose the power of moving and atrophy until they become completely paralyzed and remain in that condition unless something is done for the reflex of the patient. In Anterior Poliomyelitis we have an atrophic condition resulting in spinal paralysis. It is found frequently in the acute form in children up to five years of age, in those children who are subject to malnutritive conditions or do not get proper nourishment at this time of life. It comes on more frequently in summer than in winter, due to the exhaustive action of the heat and a demand for a greater food supply which cannot be satisfied. It attacks principally the cervical and lumbar regions, mainly what are called the enlargements. It begins in the form of acute hemorrhage, then follows destruction and degeneration of the ganglion cells. When you see a child that is paralyzed give no prognosis if there is a typical anterior poliomyelitis. Here the paralysis is incurable for the ganglion cells are degenerated. The anterior horn cells atrophy, the multipolar cells are entirely destroyed, the anterior nerve roots also atrophy and the muscles waste away. The symptomatic conditions come on with slight fever, rheumatoid pains and convulsions. After a few days, during which the patient has headache and vomiting paralysis comes on, at first complete, then settling down to a certain group of muscles which become permanently paralyzed, gradually the muscles waste. This is a differential point of anterior poliomyelitis from hemiplegia. Another differential point to distinguish anterior poliomyelitis from paraplegia or hemiplegia is that the paralysis goes away in the inverse order of its coming e.g. if the arm is the last part to become completely paralyzed, it will be the first part to be restored.

If it is caused by cerebral or spinal hemorrhage the opposite is the case, i.e. it follows the same order in going away as in its onset. Very seldom we have a complete recovery or is recovery possible in this disease, first because the superficial muscles are more or less wasted, we do not say atrophied, because if so they may be restored, but if they are wasted they have practically degenerated. The main test is the reaction of degeneration. Second the reflexes are lost with no loss of sensation. Here is a differential point to distinguish it from locomotor ataxia or hemi or paraplegia. Third, the bones cease to grow, the degeneration extending into them.

Treatment of Myelitis.

The lesions are found in the upper dorsal, the lumbar and the cervical vertebrae, this being in the order of their frequency, i.e. the dorsal being the most prominent. These lesions produce venous congestion, which is probably due to reaction from intense contraction of the muscles pressing on and drawing down the fascia and ligaments tightly upon the nerves leading to and from the cord. This will lessen or destroy the nerve communication resulting in paralysis and venous stasis. We say probably because we get improvement where the muscles are relaxed, and if so we have to go back to the primary cause, viz. the obstructive congestion causing pressure on the venous blood. The great thing we have to deal with here is the proliferation of connective tissue, in the walls of the veins. All correction of lesions without control of proliferation will avail nothing. We require arterial blood if the muscle tissue is increased.

To reach this condition;

(1) Give direct treatment to the vasomotor system in the superior ganglion area, to gain control of the whole vasomotor system.

(2) Give vasomotor treatment at the local level of the part affected, the object is to cause absorption and to open up the venous circulation away from the point affected. Both numbers (1) and (2) are inhibitory treatments.

(3) Give strong inhibitory treatment of the muscles directly around the area of the lesion, e.i. the spinal cord lesion. This is to allay the irritation. The patients will tell you that they cannot sleep lying down, that the brain seems to be right down at the point of hypersensitiveness in the spine.

(4) Look particularly to the ribs in the region of the lesion to prevent cutting off of the trophic influences and the blood and lymphatic circulation. A peculiar thing is that the sensation is always anterior at the sternal end of the rib because perhaps the head of the rib is twisted, dragging the ribs. The pain is aggravated on pressure, the best way to treat for

twisted ribs is at the posterior of the thorax.

(5) Correct the lesions found in connection with the spinal vertebrae in the area involved.

(6) Look to the pulmonary and renal blood systems, Give thorough kneading treatment to the respiratory muscles and the muscles in the renal area in the spine, i.e. ninth dorsal and third lumbar or the renal nerve area, both direct and indirect.

(7) Give the patient absolute rest in bed, using hot fomentations or hot baths to allay the irritation of the surface of the body, also use freely hot irrigation of the intestines to keep thorough elimination of all toxic product and to prevent the absorption of toxic substances.

Poliomyelitis Treatment.

This is a localized condition, but the (1) point is to give a general spinal treatment to stir up the interaction of the different portions of the spine to each other, through the intercommunicating fibres.

(2) Give strong spinal extension to relieve the pressure and obstructive conditions.

(3) Correct the lesions, particularly those in relation to the ribs.

(4) Give articulation of the spine from above down particularly in the area of the spinal cord lesion.

(5) Give articulation of the head of the rib to stir up the circulation to and from the spinal cord.

(6) Give the patient absolute rest in bed straight out on the back to relieve tension. Use the hot bath and rectal irrigation, (not intestinal).

Acute Ascending Myelitis.

Commonly Landry's Disease. Here there is an acute condition marked by Progressive and very rapid paralysis. It begins usually in the feet, passing up to the muscles of the trunk, then to the muscles of deglutition and respiration, with loss of speech and power of swallowing. The cause is probably a toxemia. It is found principally in the male sex between twenty and thirty years of age. It follows traumatism some of the infectious diseases, or long exposure to intense cold. The starting point is the weakness of the muscles action, generally first marked in the foot, then it affects the muscles in the leg.

The development of the condition is marked by 3 stages.

(1) Great muscular tenderness in the foot, this sometimes makes it difficult to distinguish it from gout at this stage

(2) Loss of muscular tonicity.

(3) Intense pain in the nerves that supply the muscles affected. Musser says that the pain is that of neuritis (terminal), where the nerves are distributed to the muscles.

Treatment:-

(1) Give thorough treatment of the spine, especially in the lower dorsal and lumbar regions. This includes extension, rotation and articulation of the whole spine to correct the inequalities and incoordination of nerve and blood supply.

(2) Correct the lesions involving the vertebrae and ribs especially separating the vertebrae to relieve pressure.

Some good results have been gained by the use of traction by spinal brace, but sometimes this is dangerous and Osteopathic treatment is better.

(3) If paralysis extends the trunk give strong treatment to the muscular system, treating along the spine.

(4) Give thorough treatment to the limbs upward then downward.

(5) Keep the patient moving as much as possible, i.e. voluntary.

(6) Diet the patient from the standpoint of nourishment for the nervous system.

(7) See that the eliminating organs are kept free, more particularly the urinary system. There is a great tendency to retention or suppression of uranes.

Articulate at ninth dorsal to the third lumbar and give muscular treatment.

Syringomyelia.

At the beginning this is an inflammation. It is a chronic progressive condition, marked by a degeneration of the spinal cord, followed by the formation of a cavity, (something similar to the cavity formed in the lungs, it is a kind of spinal cord gangrene.

(2) The beginning of the condition is the overgrowth of neuroglia around the central canal of the spinal cord.

(3) The next stage is the muscular atrophy stage, the atrophy corresponding with the location of the lesions in the spinal cord. (Neuroglia is the gelatinous substance that fills in and binds together the neurones. It differs from the nerve cell in that it is a connective tissue. These connective tissue cells are the structure part of the nervous system into which the neurones are built. If the nerve cells degenerate the neuroglia takes its place and here the neuroglia cells are called spider cells by some).

The starting point of syringomyelia is in the neuroglia, and overgrowth. How does it affect the nerve cells and why? By pressure upon the nerve cells so that they do not get normal nutrition, causing the nerve cells to atrophy. In origin it is a sensory disturbance. Hence, the most marked symptoms are loss of temperature locally and loss of the sense of pain; impairment of the tactile sensation. It attacks the cervical and dorsal regions, first showing itself in the posterior or in the posterior-lateral tracts. It is found principally in the male sex before thirty years of age.

Symptoms.

The onset is slow. One of the first signs is a degeneration of the arm, because it originates in the cervico dorsal region, the limbs become spastic. In the next stage there is an impairment and gradual loss of function of the bladder and rectum. In the early stage we do not find pain but an exaggeration. If there is pain

it is of the neuralgic type. There is an increase of the reflexes, also progressive muscular atrophy and sometimes deformity of the spine, e.g. lateral curvature. Another marked symptom is the atrophic symptomatology is the presence of bed sores, little abscesses in the cutaneous or sub cutaneous tissue structures, also blisters on the surface of the skin.

Treatment.

- (1) Keep the patient absolutely quiet, push the nutrition of the patient as much as possible, using concentrated foods as much as necessary.
- (2) Give treatment along the spine to keep up the circulation to and from the spinal cord and stimulate the nerve impulses toward the periphery. You may treat twice daily, the treatment should be articulatory of the vertebrae and ribs.
- (3) Keep the skin and muscles in the best trophic condition possible.
- (4) Give thorough treatment to the lymphatic system to establish the elimination of waste from the tissues.

Spinal Tumors.

These tumors are syphilitic, tubercular or cancerous in their nature, formed within the spinal cord proper. The pathology of these is the same as that of the type to which they belong.

Symptoms

- (1) Paroxysmal pain, localized in connection with the point where the tumor is located.
- (2) Muscular spasms.
- (3) Girdle sensation in the area of the tumor.
- (4) Paralysis, first unilateral, then bilateral.
- (5) Increase of the superficial and deep reflexes.
- (6) Variations in the temperature on the two sides.

The most common point involved is the lumbar enlargement. You get as a symptom here involvement of the reflexes. Sometimes we find involvement of the upper dorsal region, in which case there will be pain associated with the thorax, e.g. intercostal neuralgia or rheumatic pain. In the lumbar region reflex action is lost; in the dorsal or cervical regions reflex action is exaggerated.

Treatment.

- (1) Manipulate very carefully the soft tissues around the spine in the area of the tumor, at first superficially, then deeply, to procure perfect relaxation.
- (2) Give spinal extension,
- (3) Give vibratory treatment over the field of the tumor to reach the tumor bone case of the column.
- (4) Treat the lymphatic and venous systems so that the circulation may be kept free away from the point of tumor.
- (5) Eliminating treatment to the skin, kidneys, etc.

Bulbar Paralysis.

Or as it is sometimes called Glossolabipharyngeal Paralysis. Here we have the chronic progressive paralysis involving the lips, tongue, and larynx, due to the degeneration of the motor nuclei in the medulla. It is rarely if ever, primary being nearly always secondary to some involvement of the motor tract.

Symptoms.

At first are associated with the tongue, difficulty in pronouncing the letters l and t. It shows itself most marked when the patient is exhausted and in the early stages can be overcome entirely by voluntary effort of the patient.

Second stage is represented by the inability to put out the tongue and associated with this is the inability to use the lips, coordinating one with the other, and a difficulty in articulating the letters p and b.

Third State; There is an increased constant flow of saliva, preventing a closing of the lips. Then the soft palate becomes flaccid and non contractile and then deglutition is difficult and articulation of word impossible. The disease generally runs a course of from one to five years, gradually getting worse and the patient usually dies of pneumonia or some exhausted condition of the nervous system. In some chronic types it may go on for twenty or thirty years, the paralysis beginning in the tongue and practically taking in the entire body.

Treatment.

The primary condition is an intense muscular contraction, involving the trapezius and the other muscles of the shoulder and scapula. This intense contraction cuts off the sympathetic fibres and the motor shuts off the venous circulation of the blood and presses on the recurrent laryngeal nerve (branch of the tenth cranial), the spinal accessory nerve, (branch of the eleventh cranial) the ninth cranial nerve, Glossopharyngeal) and the twelfth cranial nerve, (the Hypoglossal). This directly interferes with the return of the blood from the brain through the internal jugular field, resulting in a degenerative process in the posterior and basal parts of the brain.

To remove these conditions - (1) Relax the muscles in the neck by strong inhibitory treatment.

(2) Stimulate the action of the fifth, ninth and tenth cranial nerves to free respiratory action and facial muscle action.

(3) Extend and rotate the head and see that the angle of the jaw and mastoid are kept thoroughly relaxed.

(4) Lock to the first and second cervical vertebra. Apply articulation to these if there is no lesion.

(5) If deglutition is impossible use the stomach tube to give nutrition to the stomach so that it may become lodged in the trachea.

(6) Keep up the motor action of the muscles in the rest of the body, cause this motor action to reach to these muscles involved.

THE SPINAL DEGENERATIONS

(1) Progressive Muscular Atrophy

Here there is a slowly progressive disease with

the loss of power resulting from atrophy caused by degeneration of the multipolar cells in the gray matter in the anterior horns. It is also found involving the pyramidal tracts and here it passes up into the pyramidal portion of the brain. It is found principally in the male sex about middle life following traumatism, exposure, over wrought mental conditions and in cases of hereditary neurosis. In all cases we find lesions in the vertebra and accompanying rib in the area corresponding with the muscular atrophy. The muscles are wasted the fibres being in the state of fatty degeneration with over growth of connective tissue in the muscle as a whole.

Morbid Anatomy.

The degeneration follows the path of the motor nerves peripherally. The primary degeneration is in the ganglion cells the neuroglia cells being increased at the expense of the ganglion cells, then the ganglion degeneration is along the anterior and pyramidal tracts into the pons, the internal capsule and the later involving the motor nuclei of the medulla and the cortex.

Symptoms.

The first symptom is pain from some unknown cause, in the upper extremities. The soft part of the thumb generally is the first affected, atrophying. Next there is atrophy of the interossei muscles then contraction of the flexor muscles, later the contraction of the extension muscles of the hand and arm, then it moves gradually up into the thorax and neck, the last muscles to be affected are the face muscles which first show fibrillary contraction, each fibre seeming to twitch by itself. This is followed by degeneration of the facial muscles. In the chronic condition we get a spinal deformity or some form of curvature of the spine. One negative point is the absence of the sensory symptoms unless it is complicated with some form of meningitis. Where there is no meningeal disturbance there is loss of sphincter power. Gower says that a case of progressive muscular atrophy runs its course in about six months and thereafter cannot be cured, but this is not found to be true. In a case that he had pronounced as such patient was alive five years after it was so pronounced. We cannot perhaps lay down a general limit, it depends on the patient's constitution.

Treatment. This is a condition distinctly spinal and trophic in its origin and relation to the spine. To treat (1) Give extension and rotation to the head and neck, accompanied by raising of the clavicles so as to stimulate the spinal circulation and free all impingements to the spinal articulation. (2) Give manipulation to the spine in the dorsal and lumbar regions, mainly to get the spinal fluid to circulate downward and outward to prevent a static or hydro spinal condition. (3) Manipulate the limb which the atrophy takes place, with rotation, flexion and kneading of the muscles of this limb, the object is to keep venous stasis from

developing.

(4) With the patient on the face give strong inhibitory treatment in the lumbo sacral region, pulling up the limbs backward at the same time.

(5) Give rectal dilation to stimulate any sympathetic system and through it the vaso motors and to get control of the blood supply.

(6) Correct such lesions as you find e.g. the fifth, sixth, and seventh cervical and first dorsal, if in the upper extremity, and lesions in the sacro sciatic region in the lower extremity. Also correct lesions in the hand or foot itself. Generally on cause of trouble can be located in the small bones of the hand itself. Treat the whole limb soft tissues, muscles and ligaments. Always treat up and then come down with spinal treatment at the last.

(7) Give the patient plenty of open air exercise, or if he cannot walk have him out in the air in a chair vehicle.

(11) Pseudo Hypertrophic Muscular Paralysis.

This is a primary disease of the muscles in which there is the overgrowth of connective tissues and inter muscular atrophy. It is found in childhood principally, beginning generally when the muscles begin to be used, i.e. when the child begins to walk. It shows itself first in the muscles of the calf of the leg. It is first noticed in the slowness of walking. The second stage is that of enlargement of the gastrocnemius, the child stumbles and falls; with the enlargement there is tenosus. The third stages are that of enlargement of the recti muscles of the abdominal field and the spinal muscles in the lower part of the back, the infra spinati are enlarged the and pectorales major atrophy. When these are involved we get the drop foot with lack of power to hold the feet legs and spine in position. The child is unable to walk. sometimes the condition continues to develop for twenty years, usually resulting in some kind of a deformity. It may develop in traumatic conditions, with a localizing injury to the muscles themselves, or traumatism of the spine and may involve the hands and feet. In such cases we find the progress of the disease is slow, and this is therefore a favorable point.

iii. Idiopathic Muscular Atrophy.

The only difference between this and the previous type is that in this type there is no hypertrophy of the muscles, at least none apparent, the paralysis resulting primarily. Also there is a difference in the location of the involved muscles. In this case the muscles are nearly those of the face. This condition is nearly found secondary to neuritic. There are three types of this disease -- only in

(1) Du Chenna Type, found early childhood, beginning in the facial muscles, altering the facial expression and destroying the contour of the face.

(2) Erb Type. It is found between puberty and majority and here the atrophy and loss of power is in the upper extremity or the face. The muscles most commonly involved are the biceps, triceps, sterno mastoid, infra-mandibular spinatus and levator anguli scapulae. muscles. The result is thoracic flattening and scapular bulging. The patient cannot walk except in a wabbling gait, Generally the condition goes on into some type of consumption.

(3) Neural Type. This begins in the small muscles of the hands or feet, extending slowly upward. As the muscles atrophy we find what are called claw hands claw feet. The condition is generally found past middle life, unless in cases of neurotism secondary to gout. In meningitis complications the sphincter power is retained, as the meningitis keeps the control in the cerebro spinal nervous system and keeps it clear.

The false hypertrophic muscular paralysis should really be classified as a muscular disease.
Treatment of False and Idiopathic Types.

In these cases one of the main points is the incoordination between the nerve action and the muscle action. Therefore,

(1) Give thorough extension of the spine followed by articulation, manipulation of the muscles to free the circulation and treatment directed to sustain the heart action.

(2) Give flexion, rotation and extension of the limbs to aid circulation, with manipulation of the muscles in the limbs.

(3) If located in the arm or hand, with the patient sitting up, articulate the head of the ribs in relation to the vertebrae. Beginning at the first dorsal, putting the thumb between the first and second dorsals, and pulling the arm upward and back of the head and down again. Continue this treatment to the ribs down through the dorsal region.

(4) Where the facial muscles are involved, give articulating treatment from the upper dorsal through the cervical region upward with rotation and extension of the head and neck.

(5) Manipulate thoroughly the muscles involved in the atrophy, upward toward the center of nerve and blood supply.

IV Spasmodic Paraplegia.

This represents a primary lateral sclerosis or a chronic degeneration of the spinal cord, involving the pyramidal tract, the nerve trunks and the gray matter in the spinal cord and the basilar portions of the brain. Some claim it always has its origin in the brain, but if you really have the spasmodic paraplegia, you never have an origin in the brain, because the origin is in the nerves below the brain. If the brain is involved at all, it is because it has traveled upward and this makes the condition

more hopeless. The condition is developed gradually (1) by loss of motor power in the lower extremities; (2) Spasmodic contraction of the muscles; (3) exaggeration of the reflexes.

This is a diagnostic point and indicates that the condition is gone as far as it can go in the spine and has gone and will now go toward the brain. The condition is found in persons between the ages of twenty five and thirty years, principally in the male sex in connection with and secondary to neuritis, exposure, syphilis, gonorrhoea, traumatism and drug intoxications. Always try to get a history of the patient and if there is a history of gonorrhoea do not make promises of a cure. It comes on gradually, beginning with a dull aching pain in the back or limbs, or in both, a tired feeling or stiffness in the back or limbs. It always begins in the lower extremities and when it is established, we get the two sympathetic conditions (1) increased, exaggerated, reflexes, especially in the knee jerk (2) ankleclonus with muscular rigidity and spasms, also a peculiar gait in walking in which the feet can be lifted or dropped, but cannot be thrown forward; the toe dragging. This condition goes on increasing until the two limbs approximate closely to one another, sometimes overlapping and cannot be separated. Sensation is not disturbed and the muscles do not atrophy. When the condition becomes chronic the muscles tend to hypertrophy, i.e. connective formation. In some cases the arms are involved secondarily.

Another type is called Secondary Spasmodic Paraplegia. This is found always secondary to spinal cord lesions or degenerations in the motor tract. This produces (1) weakening of the limbs, the patient will say the limbs are not able to support the body; (2) increased reflexes stiffness and rigidity. The stages found in the other types are found here. It occurs in small children. A child should be examined after birth as to any traumatic condition or congenital hip dislocation, as they are then easily relieved.

Another form in the Double Spastic Paraplegia. There is only one distinguishing feature, and that is the sensory involvement as well as the motor, i.e. the degeneration is in the posterior as well as the anterior tract. The morbid anatomy is that of sclerosis ascending along the pyramidal and cerebellar tracts. The beginning is on the posterior side with numbness, followed by motor symptoms such as exaggerated reflexes, loss of power to use, feebleness, etc.

Treatment of Spastic Paraplegia.

In all of these paraplegia we have a morbid anatomy condition of the spinal cord, viz, degeneration. For that reason it is an incurable condition, i.e. cannot be completely cured, but may be benefited to quite a degree. This benefit is probably due to the fact that there is in the nervous system the principle of substitution. Other nerve fibres take the place.

of the degenerated fibres, but this cannot be absolutely carried out. The primary cause is a venous obstruction in connection with the spinal cord circulation. The lesions depend on the point involved as well as the cause. The main lesions found are in the lower dorsal, lumbar and sacral regions and are principally posterior lesions. Among the physical conditions (1) increased local pressure temperature of the head by reaction from the spine, tendency to strong contraction of the head muscles. This is the reason why some incipient spastic paraplegia may go on to apoplexy. (2) tenderness along the sides of the neck because of the reactionally involvement of the sympathetic system. (3) The result of these conditions is pressure on the venous system. The starting point is always in a large vein and this differentiates this disease from paralysis. The cause may be exposure or injury. The result is partial or complete paralysis involving primarily the nerve terminals. Following this we have a chemical decomposition of the connective tissue and destruction of the terminal fibre portion of the nerve. Changes take place all the way from the mechanical to chemical and these react upon the functional activity. To overcome these conditions give the following treatment:-

- (1) Thorough general treatment, especially rotation, extension and flexion of the head and neck, articulation of the clavicles and thorax.
- (2) Stimulate by articulatory treatment downward along the spine, followed by flexion and rotation of the limbs to free the circulation of the blood.
- (3) Correct the lesions found in the dorsal lumbar region.
- (4) Give attention to the intestines and bladder, if necessary use the hot rectal irrigation, intestinal lavage and the general lavage and the general hot bath.
- (5) Thorough treatment of the abdomen, kneading the muscles, etc. to maintain their tonicity. Try to overcome the constipation in all possible ways, except by the use of cathartics. Give light easily assimilable form of food, for other forms, of course, aggravate the constipation. also do not give the patient an excess of water or fluids, as you already have a static condition of the venous blood, and the more water you give the more you increase the condition.

Paralysis

There are quite a number of types of paralysis. The starting point from the lesion side is in the muscular system -- contraction and a rigid condition of the muscles. We generally have at the foundation anemia, either general or of some particular type. The lesions interfering with the circulation are of the spinal vertebrae, usually below the ninth dorsal. No satisfactory explanation can be given of this. Lesions of the ribs, particularly of the lower ribs, from the seventh dorsal down, are found, also lesions of the innominate, hip joint and coccygeal regions. Sometimes these lesions are primary and sometimes secondary.

In hemiplegia and monoplegia the paralysis in the

upper extremities are primary with the involvement of some local point in the lower cervical and upper dorsal area. When both upper and lower limbs are involved we find lesions high up in the dorsal region, or high up and low down at the same time. One case cited due to injury in which the lesion was at the eighth dorsal and affected all parts below the diaphragm. One at the fourth dorsal and involved both upper and lower extremities. Another case at the sixth dorsal and the lower dorsal region in which the abdominal cavity and the left arm only were involved. This is in line with the osteopathic principle that if the lesion is as high as the fifth dorsal it affects both the upper and lower extremities; below that the lower extremities, with a possibility of affecting part of the upper extremity. Another point brought out in osteopathic practice, having no confirmation in surgery, is that lesion low down in the spine or at the lumbar region will affect both lower and upper extremities. We do not know why this is true, as no anatomical fact known to us will explain it.

In hemiplegia the most common lesions are found at the fourth and fifth lumbar. In facial paralysis the first three cervical vertebrae are involved. The paralysis may be due (1) to direct pressure on the nerves or plexus of nerves, e.g. lesions in the last cervical and first dorsal, causing paralysis of the muscles supplied by the ulnar nerve lesions of the head of the humerus in connection with the brachial plexus. We find this last type in the history of rheumatism, pain in the arm and then paralysis from a sublexation. (2) May be due to some disturbance involving the cord itself at some particular point e.g. lesions at the second and third cervical, causing paralysis of one hand, entire loss of articulation in that hand. A point to be remembered is a sort of general principle is that, if the hand and fingers alone are involved, the lesion is a nerve lesion; if it is diffuse at all in to the arm, is a cord lesion. What is the explanation of this? All paralysis begins on the sensory side. All authorities do not so agree, but we feel sure of it. This is one reason why most cases of paralysis the first symptoms noticed are sensory. The sensory point is higher than the motor point and the motor point is involved by inhibition, and to build up motion it must be through the sensory side and motion will be restored at the same time. Most promontory symptoms in paralysis are sensory symptoms. So, in diagnosis, you may expect to look for lesions higher up than the motor side. This does not mean a loss of sensation. Shutting off nutrition from the spine itself. This will take up such lesions as optic atrophy. We think not more than one in ten have optic atrophy. There is a lesion in the cord cutting off nutrition, which will produce the atrophy. The common lesion in optic atrophy is in the third cervical and that is one

involving the nutritive system. (4) May find pressure in connection with the blood vessel system, this is found particularly in the circulation of the blood around the hip joint. Many cases of atrophy are really due to the blood condition and the restoring of the circulation will remove the atrophy or the symptoms of it.

Treatment.

Give direct attention to the muscles themselves. Thorough relaxation of all the soft tissues, such as muscles, ligaments and cartilage, so as to reach the osseous conditions.

(2) Correction of the lesions found in the particular case.

(3) Attend to the upbuilding of the system, particularly to supplying blood to the nervous system. This is to be done on the nutritive basis and a distribution of blood to the spinal cord by extension of the spine (cerebro-spinal), and articulation of the ribs (sympathetic) which increases the blood supply and the vaso motor effect to and from the spinal cord. The blood supply is regulated by the sympathetic system.

(4) Tone up the nervous system through the spinal cord by articulating the spine.

(5) In a case of blood clot, either in the brain or in the spine, stimulate as much as you can the general cervical circulation and the vertebral circulation in order to promote absorption. Some authorities recommend injecting a few drops of ammonia or giving it through the alimentary field, but this is unnecessary.

(6) Attend to the local treatment of the paralyzed portion of the body, beginning at the point most distant from the nerve center, i.e. if in the arms, begin to treat at the fingers and go up.

We think the original cause of paralysis is a toxin kept up or maintained by a lesion which may be in some vertebra or rib or bone in some region corresponding with the area affected. In diet give diet for the nervous system.

Ataxia.

There are three main forms of ataxia.

(1) What is called Ataxic Paraplegia, or Simple Ataxia, a sclerotic affection of the lateral and posterior columns, causing both spasmodic paralysis and ataxia. What is the difference between paralysis and ataxia? Ataxia is an inco-ordination in muscle movement, not its loss; paralysis is the loss of movement. In simple ataxia we have both paralysis and ataxia combined, it comes on from twenty to forty years of age and is associated with traumatism of the spine. It is sometimes caused by exposure, intoxication, etc. There is a gradual loss of the motor power. In the first stages there is lack of coordination in walking. In the second stage there is the involvement of the eyes. When the eyes are closed

the ataxia is greater. In the third stage there is an involvement of the flexor muscles, more than the extensors, causing an exaggerated tendency to flexion. This goes on increasing until the patient is unable to walk at all. This is one reason why we have spastic paralysis associated with the ataxia, the reflexes are either normal or slightly exaggerated. There are dull pains or aches in the backs of the legs. The condition usually goes on involving the whole body, even the heart muscles till death results.

(3) Hereditary Ataxia or Freiderichs Disease.

This is found in arly life, developing from childhood up to puberty. It is found equally in the sexes sometimes it runs in families. The fundamental cause is generally traceable to a specific intoxication from the hereditary standpoint.

Morbid Anatomy.

There is extensive sclerosis of the lateral and posterior columns. One peculiar characteristic of hereditary ataxia is that it does not usually show itself until the child has completely acquired facility in walking, perhaps because walking is part of the child development process. Facility in walking, on the other hand, calls up all the latent nerve energy. If the centers of the nervous system are intoxicated hereditarily, there is little latent nerve energy to call upon, and therefore a failure of function. A hereditary predisposition is from both sides.

Symptoms.

First an incoordination in the lower limbs then in the arms.

(2) Then there is a peculiar swaying movement of the body.

(3) Then there is loss of reflexes, followed by failure of the eyes.

(4) Lastly, there is curvature of the spine, generally lateral. Here is where you get a curvature of the spine in the child from twelve to thirteen years of age. It is the last condition developed and is not a cause but a progressive stage in the disease.

(3) Locomotor Ataxia.

This is a chronic degeneration of the spinal cord, involving the posterior columns or the posterior nerve roots, or both. The central point of the locomotor ataxia proper begins in the posterior ganglion on the posterior nerve root. Why does it involve the posterior ganglion? Because that is the trophic center. Secondary degenerations are found in the basal ganglia, restiform bodies, cerebellum and in the cortex of the brain.

Symptoms.

The characteristic symptoms which differentiate it from other types are;

(1) The lightning pains in the lower limbs, generally shooting down from some point in the dorso lumbar spine along one limb at a time, or then may be limited altogether to one limb

(2) The second symptom is the girdle sensation around the body from the point of spinal lesion. These the symptoms are essential to locomotor ataxia. We claim the point in the spine is the point of degeneration, the lesion in the cord itself. Suppose you get a pain in the dorsal region, and the lesion is found in the lumbar region, remember it is first a sensory disturbance and the sensory centers are higher up than the motor.

(3) Inco-ordination of movement without paralysis or atrophy. In the later stages you may get some atrophy, but it is a secondary characteristic.

(4) The absence of the knee jerk, also of the vesicular and rectal reflexes.

(5) The Argyle Robertson Eye. (6) The entire loss of sexual power. It comes on from thirty to forty years of age, generally in subjects who are neurotic, syphilitic, or in cases of prolonged exposure; excessive exhaustion of the nervous system, traumatism affecting the spinal cord, meningeal hemorrhage. The starting point is not in the spinal cord. There is no evidence to prove its starting there. It starts either in the posterior nerve root or in the posterior ganglion of the nerve root. The vertebral lesions are either direct causes by pressure on the nerves or those lesions maintained in ataxia condition. In the latter case of original cause is to be traced to a congestion or toxic condition, or both, of the blood supply to the nerve roots or the ganglion, causing such an enlargement of the root that the root is larger than the foramen of exit. This results in pressure and the degeneration in this case is a gangrenous process. The meaning of this is that there is a small foramen. In the normal condition there is room for the nerve to have lateral movement, hence, we have the nerve root thickened here because it is constricted by the foramen. Thus, the nerve impulses and the blood supply are cut off. This is the reason why we have pain and the girdle sensation starting from this point. Following this there is sclerosis, which passes into the posterior column, following the same path as the nerve impulses. The seat of the lesions are in the lower dorsal and the upper lumbar areas.

Morbid Anatomy.

There is degeneration of the nerve fibres, that is, the posterior nerve fibres or the posterior ganglion. The degeneration travels along the posterior tract, the ascending anterolateral tract, the cerebellar tract and the pyramid tract. The most common part in the brain primarily involved, is the restiform body, with cerebellar sclerosis resulting in terrific headaches. The peduncles represent another point involved and this explains some what the incoordination of movement. The first involvement of the cranial nerves are that of the second, third and eighth and the tenth secondarily. The second and third are most commonly involved. Why is the Argyle Robertson symptom present at the optic nerve is not involved? Simply expressed, the Argyle Robertson eye is a sympathetic condition primarily the reaction of the toxic condition on that part of the sensory system most responsive to the muscular sense.

Symptoms.

(1) It comes on with incoordination of movement gradually developing. The patient first notices an inability to steady the body without support, even with the eyes open. Here we may certainly conclude the

condition is rapidly traveling brainward. This shows particularly when the two feet are brought closely together with the eyes closed the patient cannot preserve his equilibrium. These symptoms are not due to the motor deficiency, and there is no wasting of the muscles, but it is due to the loss of the muscular sense, so that the patient is not able to appreciate the position of his body without visual effort. Thus far the disease is on the sensory side. The patient is unable to preserve his equilibrium but this is not due to the motor involvement, it is due to the incoordination of the muscular sensations within the spinal cords. In attempting to raise the foot and leg from the ground there is produced a swaggering movement. This may extend to the arms and trunk through reaction. This is a paretic condition of the muscles shown by the swaying semi staggering condition of the body, e.g. in many cases the patient is able to ride when sitting unable to ride when standing, or is unable to do anything with the arms when walking.

There is partial anaesthesia, sometimes paraesthesia of the feet, e.g. a feeling as if the feet were not in contact with the ground. There is a lessening of the cutaneous reflexes. A paroxysmal crisis symptom is found particularly in the visceral organs, e.g. gastritis, vomiting, paroxysm of the laryngeal, rectal and urethral muscles, paresis of the rectum and bladder in the form of incomplete peristalsis with urinary retention and constipation.

Trophic disturbances are found with vaso motor changes. Here you get the atrophy or hypertrophy of the muscles, oedema around the joint, particularly in the feet. There is tendency to spontaneous fracture and dislocation, falling out of the teeth, shedding of the nails, excessive local sweating. At this stage we find instead of the Argyle Robertson eye, ptosis and diplopia and optic paresis. There may or may not be associated with optic ataxia.

In the last stages we find paralysis, hemiplegia due to cerebral hemorrhage. The development of the disease is slow, except in those cases where the nervous system is by heredity neurotic. Gower says that the natural course of the disease, of the desired type, i.e. without the hereditary element, is twenty five years. The stages that mark the development according to Gower, are, (1) loss of the reflexes, particularly the knee jerk. (2) Loss of sensation to pain, which marks a stage further on in the development. Gower claims that the lightning pain and girdle sensations are not necessarily typical. This is demonstrated in optopathic experience. When we find it, it is not necessarily a symptom of locomotor ataxia, at least, in the morbid anatomy sense. (3) This stage is marked by the Argyle Robertson eye and represents a transfer

of the field of degeneration changes from the spine to the brain.

(4) This stage is marked by paralytical symptoms, e.g. eyelids, muscles of the arms, legs, etc. (5) Atrophy.

He claims that in hereditary conditions the nervous system is so exhausted to begin with and the disease makes very rapid progress. The cause of death in locomotor ataxia is either degeneration changes in the heart or kidneys complications or the ataxia is the remote cause. In some cases the immediate cause is softening of the brain. We claim the lightning pain and girdle sensation are symptoms before locomotor ataxia is established. The same is true of preataxia optic atrophy. It is an important point in diagnosis from the osteopathic side. If you get a case of this stage it is always curable if you can eliminate the specific condition of the intoxication.

Treatment of these ataxias.

The lesions are found in the lower lumbar and sacral regions, in the lower dorsal and upper lumbar areas and sometimes as high up as the eighth dorsal, rarely we find it at the ~~ninth~~ eighth dorsal. In most cases we find it in the lower lumbar. Sometimes we find spinal curvature; in some cases thoracic lesions involving the rib and in some cases lesions in the cervical region particularly at the atlas. The spine in chronic stages may have ankylosis in the lumbar region and later it may involve the whole spine. This condition is more particularly found with a history of some specific disease infection, e.g. gonorrhoea, syphilis, etc. If sclerosis is found involving the central nervous system no permanent recovery is possible because it is impossible to regenerate the central nervous system (use tests for the reaction of degeneration). In this case the symptoms can be relieved and the patient's condition palliated and this is about all you can do for them, still that in itself is a great relief for the patient. If the case is found in the early stages and is uncomplicated by hereditary, specific intoxication or mercurialization, it is curable. When we find these conditions the curability depends on the ability to eliminate these intoxicants. Syphilitic blood conditions and gonorrhoeal lymph conditions are curable, even mercurialization is curable.

Treatment proper.

Relax all muscles along the spine, keep them relaxed. Treat often enough to use frequently the hot bath or hot fomentations,

(2) Give thorough extensions to the spine, n.g.i.e. apply extension periodically, and that is much better than the surgical extension by apparatus.

(3) Give articulation of the vertebrae and ribs, in this case articulate with the patient sitting. Stand behind the patient and place the thumbs at the angle

of the ribs, pressing tightly upward and raising the arms above the head. If this is done without help you must take first one side and then the other, better have an assistant to raise the arm then you can work on both sides at the same time. Then place the thumbs at the lower ends of the transverse processes, beginning with the eighth dorsal, raising the arm above the head and treating the same way as above down through the dorsal and lumbar regions.

(The paresis of the muscles is of vaso-motor origin because the motor system is practically not involved at all and the vasomotor system is always involved because the locomotor ataxia is trophic disease on account of the involvement of the posterior ganglia.

(4) Try to correct the lesions found in the lower dorsal and lumbar. We generally find them posterior on postero-lateral. (5) Give strong stimulating treatment from the middle dorsal down in order to stimulate the spinal circulation, also give treatment to stimulate the sympathetic circulation at the heads of the ribs. If the ataxia has extended to the upper half of the nervous system, give similar treatment in the upper dorsal and cervical region. (6) Treat carefully the lower limbs, beginning at the toes and treating upward. If the joints are involved, treat by extension and rotation. It is generally in the knee and hip. If the case is in the later stages be careful in treating the limbs, as fracture may result from too strong treatment. (7) Give springing treatment to the lower part of the spine. Patient with the limbs flexed on the abdomen, stand in front of the patient and spring the spine toward you. This to separate the vertebrae and prevent ankylosis by increasing the circulation and to prevent absorption of toxic element within the articulation: also to prevent atrophy of the fibro cartilage forming the articulation. (8) Give thorough abdominal treatment, inhibiting in order to prevent the development of visceral crises which mean the throwing of extra work on a weak organ. Also give direct treatment directly to the plexus and stomach, also treatment directly to the blood circulation along the mesenteric path, following the internal iliac artery. (9) Relieve the lightning pains by applying strong inhibition to the anterior crucial nerve. This is best applied in Scarpa's Triangle. Also give strong inhibition in the lumbo-sacral region. You use here the limbs as a lever or not, as the patient is best relieved. (10) During a severe attack when the acute pains are present put the patient in bed and use hot applications locally and at the spine. Between attacks if they become paroxysmal, the patient should be required to do some light work. idleness is not good for a locomotor ataxia patient: there is an accumulation of nerve energy and nothing to use it on. (11) Diet the patient, carefully, avoiding indigestible food and any irritable substance that will

stir up the gastric apparatus. Determine this from the patient.

In Hereditary Ataxia. give in general the same treatment as in locomotor ataxia. Here the lesions are found at the 10th and 11th dorsal and the 2nd and 3d cervical vertebrae and the whole spinal column is generally weak.

In Spinal Compression we have symptoms of dislocation or fracture, i.e. intense local pain, always intensified by movement loss of motion in the parts supplied below the point of compression. To get good results the patient should be treated before reaching nine years of age i.e., before the nervous system is completely developed.

(1) Give thorough manipulation along the spine in the region of compression.

(2) In case it is due to dislocation, give strong extension and apply strong pressure over the vertebrae involved in the dislocation. (3) Give a treatment, stimulating as nearly as possible the method of producing the dislocation, Here you require as a general rule, three people to give a treatment, one to hold the limbs another to support the trunk of the body under the axilla and putting the body through the motions corresponding the method of dislocation, the third person applying pressure at the spinal vertebrae involved. This work is distinctly corrective.

Definition.

Locomotor Ataxia is a disturbance of the muscular sense, resulting in the inco-ordination of the muscles of the locomotor, or of the muscles in general, resulting in the inco-ordination of the muscles of locomotion, or of the muscles in general, resulting in an ataxia gait or posture.

Stammering.

This is an involuntary condition of the muscles of articulation and vocalization due in the main to nervousness. If it becomes chronic then we find a separation between the voluntary and the involuntary nervous system. This may be either functional or structural, the structural separation is in the morbid anatomy in the simple form. In the chronic form there is a tendency to degeneration of the dendritic branch between the two nervous systems. The involuntary nerve system is not all outside of the cerebro-spinal field but is in the brain and spine as well.

The symptoms are easily determined.

Treatment.

(1) Use mental suggestion and make the individual get control of himself, so that as soon as the stammering begins the mental control will stop it. Here mental suggestion is the exerting of the power of the brain over the nervous system. If necessary one force to

stop the ~~stammering~~ stammering.

(2) Make the patient respire freely and deeply before articulating. Give the lungs the greatest expansion possible before attempting to speak. ~~The~~ The control ~~through~~ through the respiratory field is such that stammering would be impossible.

(3) Make the patient articulate by the method of conscious enunciation. One way is to forbid the patient to speak unless spoken to or bidden to, like a child -- count 1-a, 2-b, 3-c, aloud. This goes on for some time; later they may make a monosyllable as they count and so on, increasing syllable. Another method is to take a deep breath after each letter.

(4) Give thorough treatment in the neck and strong stimulation in the middle dorsal to free the circulation and to stimulate the nerves to the laryngeal muscles.

(5) Give local massage to the mouth inside, and especially underneath the tongue and as far back toward the root of the tongue as you can get your fingers. Apply pressure at the angle of the jaw and apply pressure against resistance.

(6) Look to the condition of the parotid glands, stimulating them to functional activity. Stimulate the general lymphatic glands around the root of the tongue and around the anterior portion of the neck. Give strong vibratory treatment to Meckel's Ganglion. vibration in front and below the external auditory meatus: Specific treatment for the thick tongue, which is often found in paralysis, gastritis, diabetes, typhoid fever, etc.

(7) General circulatory treatment, especially through the sympathetic system field.

The Osteopathic lesions on record thus far are the Atlas, Axis and third Cervical and the Second, Third and Fourth dorsals.

Diseases of the Nerves.

Neuritis - (Beri-Beri)

This is an inflammation of the nerves, either limited to a single nerve, or general, involving a number of nerves. In the latter case it is called multiple neuritis.

Single neuritis is generally due to traumatism, g.g. wounds, fractures, dislocations, severe blows, exposures to colds, to poisons, such as that follows rheumatism, gout, typhoid fever, etc.

Morbid Anatomy.

Here there is an inflammation which usually involves the connective tissue surrounding the nerve and this type is called Peri-neuritis. When it involves the structure of the nerve it is called

parenchymatous neuritis. If it involves the intermediate substance of the nerve it is called interstitial neuritis. pressure cutting off the nerve from the centers, resulting in inflammation, hyperaemia and congestion.

In peri-neuritis the nerve sheath becomes infiltrated with the white blood corpuscles.

In the interstitial type there is lymphoid accumulation of the white cells in the connective tissue.

In the Parenchymal type there is an inflammatory increase of the Schwann Sheath substance.

Symptoms.

There are variety of symptoms, usually intense local pain boring or burning in nature, always increases by movement of pressure. The pain radiates from the local to the other points, radiation taking place through the nervi nervorum. This is the reason why in the Parenchymatous type we have the nerve sheath involved. The bones are tender on account of pain and the muscles are sensitive. The skin may be red, representing an oedematous or erythematous condition. Sometimes the skin and nails become glossy and brittle, the skin sort of scales off. If the motor nerves are affected, the pain becomes intense and the muscles and there is muscle twitching and febrile temperature localized in the muscles involved. Sometimes there is wasting away of the muscles. This degenerative change passes to the nerves.

We must distinguish Neuritis from Neuralgia. In Neuralgia you have an intermittent pain: in neuritis you have a diminished sensation. This is a typical point in neuritis.

In the multiple type we have the involvement of several nerves generally in succession, one after another. The principle nerves representing the starting point are the muscle spiral and the anterior tibial. In the multiple type there is swelling caused by the accumulation of fluid, with a tendency to paralysis. The multiple neurosis, may be secondary to alcoholism, diphtheria, leprosy, exposure to the cold or extremes in climate found principally in middle life and most common in the female sex. In the multiple type there is nearly always febrile temperature. The course is toward the spine. Notice in the early stages of the multiple type we have hyperaesthesia followed by anaesthesia. After sudden rise of temperature, followed by headaches, pains in the limbs, loss of control of the limbs, tingling of the toes and fingers.

in the later stages when neuritis becomes chronic there is an ~~xxxxx~~ atrophy of the muscles in the extremities then it extends to the trunk of the body, particularly the intercostal muscles. In Tropical countries the neuritis is endemic, e.g. in China, Japan and India. (It is here called Beri-Beri). Here we have a neurotic fever. Oedema is a marked characteristic, gradually going on increasing until it involves the whole nervous field. The first condition is loss of power to control the tendons and atrophy of the muscles.

Alcohol Neuritis.

Is found principally in the female sex because the female sex cannot stand alcoholism as well as the male. It begins first with gastric symptoms, the nerve supply to the gastro-intestinal tract being the first part involved. You will have a condition very much like gastralgia. It extends later to the extensor muscles of the extremities. In the male sex the flexor muscles are mostly involved. The male sex are also more liable to brain symptoms such as delirium tremens, in the female sex the peripheral system is more involved.

Toxic Type.

This is due to excessive use of toxic or poisonous substances, the principle one being arsenic. This is often found in patrons of the so called "Beauty Parlors". the pastes, etc. are largely arsenical and are absorbed in the peripheral nerves. It is also found secondary to the toxins of diphtheria, the complication being diphtheritic paralysis. It is found also in the toxication resulting from inflammation of special nerves, e.g. the phrenic nerve. This is found mostly in people who work in noxious poison as the workers in ammonia; the poison being absorbed after developing painful asthma complications. The brachial plexus is most commonly involved, there is also inflammation of the post-thoracic nerves, producing paralysis of the serrati muscles: also inflammation of the supra scapular nerves with paralysis of the supra- and infra spinatus muscles: inflammation of the circumflex producing paralysis of the deltoid muscle, loss of power to ~~xxx~~ raise the arm: inflammation of the musculo cutaneous nerve and musculospiral nerve involving the muscles supplied by them: inflammation of the ulnar nerve, involving the deep flexor muscles of the fingers, especially the little fingers and extensors and abductors of the thumb. inflammation of the median nerve, also involving the muscles of the fingers.

Sciatic Neuritis. This is a type (special) found principally in the male sex from thirty to fifty years of age and is associated with lesions of the

lower dorsal and lumbar areas, particularly the fourth and fifth lumbar; it is also associated with subluxation of the innominate downward; displacement of the floating ribs and partial displacement of the femurs. It is often secondary to rheumatism, gout and syphilis.

Symptoms.

The onset is sudden, with pain, most intense at the back of the thigh and extending upward to a point above the level of the hip joint. There is a boring pain in the sciatic notch which is relieved by the flexion of the limb. The pain radiates from the hip joint to the foot, producing difficulty in walking and later resulting in atrophy of the muscles.

Treatment of Neuritis.

Here we have excessive pressure causing over stimulation of the nerves, the pressure amounting to fatigue or paralysis from the muscle side, or producing a static condition of the blood and lymph. This results in an accumulation of blood lymph cutting off communication between the nerve terminals and the nerve centers.

- (1) Give the patient absolute rest in bed and determine the line of treatment by the cause leading up to neuritis.
- (2) Manipulate the muscles around the involved nerves and give as much extension as possible without severe pain to the patient.
- (3) Vibrate over the seat of the expression of the pain and along the path if there is a path. This often relieves neuritis when given deep enough and long enough to give palliative effect.
- (4) Relieve the congestion in the cranium by the freeing of pressure on the nerves in the neck, stimulating the circulation to and from the head to prevent stasis and equalize arterial and venous blood.
- (5) See that the muscles along the spinal column are kept relaxed.
- (6) Give extension, manipulation and vibration to the muscles in the involved region over the tissues themselves.
- (7) Cut off all stimulants and use hot fomentations, hot bran, etc. to relieve pain; moist heat is the best. Do not use any mud or clay preparations, as Antiplegistine, Denver Clay etc. as they keep the moisture and drive it in.
- (8) In cases involving the phrenic nerve see that the cervical region is kept thoroughly relaxed and give treatment to stimulate the action of the diaphragm.

In sciatics the lesions cause irritation on the

sciatic nerve by direct pressure on the nerve itself, or on the contributory nerve with a second interference to the blood supply. The most common lesions are along the lumbar region, especially the fourth and fifth lumbar, also the first, second and third sacral, in connection with contraction with the tissues in that region and strong muscular contraction around the innominates and in the sacro-iliac region; displacement of the sacrum and coccyx strong contraction of the pyreiformis muscle, bringing direct pressure on the sciatic nerve, severe contraction of tissue around the sciatic notch, also lesions of the twelfth dorsal, particularly in connection with displacement of the eleventh and twelfth ribs.

Treatment of Sciatica.

Treat all along the path of the spine downward, inhibiting the muscle to relax them if rigid, or if already relaxed, also give inhibition followed by extension.

(1) Correct the lesions that are found, particularly in the ribs, the innominates and the lumbar vertebrae.

(3) Treat the muscles around the Pelvis, getting down deep along the path of the iliac vessels, also relax the sacro iliac articulations and the structures around the femoral circulation by rotation and strong abduction of the limbs.

(4) Give strong circumduction to relax pyreiformis muscle, this being the principal pressure on the sciatic nerve.

(5) Give strong flexion of the limbs, applying strong pressure at the same time, posterior to the head of the femur, followed by abduction, still keeping up the pressure of the fingers at the posterior head of the femur. (6) Stretch the sciatic nerve by extension (7) Manipulate thoroughly all the muscles in the hip joint downward along the limbs and the blood system from the saphenous opening downward.

(8) Vibrate thoroughly over the lumbar and gluteal regions, followed by some kneading treatment to separate the muscles.

(9) In case of complications, as rheumatism or gout, give the treatment called for in those diseases.

(10) Keep the patient in bed and apply cold ice pack along the path of the sciatic nerve. This is opposite to the usual prescription, which is heat. If patient tends to chill give warm internal drinks of unstimulating nature. Also give inhibitory treatment directly to the nerve back of the trochanter.

Neuralgia.

This is a condition of the functional nerve pain without any structural changes in the nerve substance. (See difference to Neuritis). It is found principally in the adult life, except when it is hereditary. It is found principally in the female sex. The hereditary cases are found principally in little girls of the anamic type, or where there is tendency to jaundice condition. They often call it toothache or earache, because in such children we find weak teeth or ear affections.

Exciting causes or cause are

General debility, irritations of the nerve trunks, produced by lesions, irritation of the blood supply caused by toxic inflammation such as exposure to cold, to night air or to excessive moisture. The most marked symptom is pain of the paroxysmal type, with remission or intermission, or both. The pain is of different types, shooting, burning or boring pains. Sometimes the pain paroxysm is associated with hyperaesthesia. The pain is generally unilateral following the path of one particular nerve, with tender points along the path of the central ends of the nerves as near as possible to the center of the periphery e.g. entrance to the spinal column or the base of the cranium.

This explains why the basi-occipital region is so exceedingly tender in these cases. the skin becomes tender and sometimes red and swollen from a vaso-motor reaction, from the neuralgia. Sometimes the patient has spasms, caused by reaction from the motor side. Most types of neuralgia represent constitutional conditions. (The patient feels well otherwise). This is particularly the case in rheumatism, gout malaria and anemia.

There are many varieties, the first is Trigeminal - commonly called Tic Douloureux. Here we have the involvement of the fifth nerve or some of its branches, commonly due to luxations around the inferior maxillary regions of the upper cervical vertebrae. The pain is sometimes intense: frequently twitching (motor condition), also vaso-motor changes and changes in the secretory system, e.g. parotid, submaxillary, sublingual glands, tear secretions. Most common type is that which involves the ophthalmic branches of the fifth nerve associated with tenderness in the supraorbital region: sometimes involves the palpebral branches at the outer part of the eyelid: sometimes the infraorbital branch is involved, associated with pain and tenderness in the infraorbital, nasal and malar regions. In all cases there is extreme tenderness on the atlas, in the occipital region.

Lesions.

These are found principally in the first, second and third cervical vertebrae and the condition

may be one of two stages, either spinal or sympathetic. If the lesion is spinal the pain will be intense. If sympathetic there will be oedema and the pain will not be intense. Some of these cases will be much like erysupelas, but you will notice that they have no temperature.

(2) Occipital Type.

This is distinctly a spinal nerve condition, involving the posterior branches of the first five cervical nerves, on or more. There is tenderness in the posterior part of the neck, at the base of the neck, the pain extends up to the parietal region. Here we have generally the involving of the ear. There is pain in the muscles, sterno-mastoid and trepezius principally. Also pain over the parietal eminence and here the lesion is generally the fourth and fifth cervical.

(3) Brachialgia.

Here the pain is associated with the lower four cervical nerves and sometimes the first dorsal. One of the most tender points is the axillary region and following the path and circumflex muscle and the lower posterior part of the neck. In this case the lesion is in the cervico-dorsal articulation.

(4) Dorsco-intercostal type.

Here is involved the intercostal nerves from the third to the ninth dorsal. You will find pain traveling along the intercostal spaces. This pain is generally bilateral, indicating vertebral lesions, with points of tenderness with acute crises, usually associated with colds, exposure to drafts and strains producing rib lesions. Sometimes there is lesions of the rib, e.g. a crowding together of the ribs, occurring principally at the fourth, fifth and sixth.

(5) Lumbo-abdominal type.

Involving the posterior branches of the lumbar nerves. There are tender points close to the vertebrae, at the middle of the iliac crest, at the lower part of the recti muscles, sometimes along the path of the genital nerves. Pain in this case is an acute constricting pain (a pressure pain). Sometimes there is a downward displacement of the eleventh and twelfth ribs.

(6) Spinal type.

This is found in weak spines, following spinal concussion: often found in hysteria and may be secondary to visceral troubles.

(7) Sacro-coccygeal.

Generally due to some disturbance of the articulation in the lumbo-sacral region, or too intensely contracted muscles over the sacral foramina

lacerations or surgical operations in which no care has been taken to limit the proliferation of this cicatricial tissue. If such conditions remain the osteopath can never be able to cure neuralgia until that cicatricial tissue is removed. Polypoid growths must be pulled out by the roots, using local anaesthetic.

(5) Relax contracted tissue by manipulating along the nerve path, first inhibiting for the pain, then stimulating to distribute the excess of impulses somewhere else. Remember this in all cases of tenderness as distinguished from sensitiveness. It is really a sort of rhythmic treatment, but in the hypersensitiveness inhibition is all that is called for. (Note the differentiation between neuralgia and neuritis.

(6) If neuralgia is in the limbs manipulate lightly upward and at the same time give extension and rotation

(7) Give thorough circulatory treatment to equalize the general circulation of the blood all over the body. This is why the drug doctors use arsenic in this disease, not to stimulate the heart alone, but to get action on the circulation and he has no other way to do this. In Tic Douleureux the main point besides the pain is the twitching of the muscles. This is controlled by--

(8) Thorough extension to the head and neck for some little time. In most cases the extension will be stopped by the twitching.

(9) Manipulate downward all muscles of the neck, treating from anterior to posterior being especially careful in the region of the inferior maxillary bone.

(10) Give vibration in the region of the gasserian Ganglion.

Disease Of The Spinal Nerves.

Occipital Nerves are involved with lesions in connection with nervous headache.

Phrenic Nerve in connection with lesions at third fourth fifth cervicals. The lesions may be due to misplaced vertebrae, contracted tissues; diseases involving the meninges and in some rare cases disease of the spinal cord.

Median nerve Where this is involved we find lesions from the fifth to the seventh cervical, with atrophy of the muscles in connection with the muscles.

Ulnar Nerve. When this is involved we find lesions at the fifth and seventh cervical, fifth dorsal and fifth rib.

Circumflex Nerve. involvement we find lesions at fourth, fifth and sixth cervical. Lesions of the

clavical and of the head of the humerus.

Suprascapular Nerve. involvements we find lesions of the fifth and sixth cervical.

Dorsal Nerve diseases. The most important lesions are at the sixth and seventh dorsal, probably because the posterior nerve roots in this region supply the skin at the pit of the stomach, hence, we have pain in the epigastric area.

Liver pain expresses itself in the right scapula, around its border, passing upward from the liver along the tenth cranial nerve and radiating outward along the spinal accessory nerve.

The connection between the fifth dorsal and the fifth rib to up the ulnar rib has not as yet been traced, but that there is some connection there is no doubt. The connection of the fifth rib to heart troubles and brachial plexus might be traced to the solar plexus and back to the spine and brachial plexus.

The lower intercostal nerves have even greater bearing on the arm than the other intercostals. It is not yet known why.

Intercostal pain. If it is a typical neuralgia it is generally on the left side; if it is a neuritis it is more frequently on the right side. The reason why the neuralgia is on the left side is probably because the intercostal blood empties into the left superior intercostal blood vein, so that the blood reaches the vena cava after passing through a longer circuit than on the right side, hence is more liable to stasis or stagnation.

Lumbar Neuralgia is found principally in connection with the first lumbar vertebrae, involving either the hypogastric or ilioinguinal nerves, with irritation of the paritensum and genital organs secondary. Second and third lumbar affect the genital organs through the genito-crural nerve and perhaps the external cutaneous nerves. The third and fourth lumbar affect the abductor nerves.

Lesions in the Sacral Region are found principally in connection with the innominate. We should be careful about such cases and work out the diagnosis thoroughly. (Case cited in which the left innominate was so freely movable as to be almost disarticulated. Patient has pain in lower abdomen, inter-pelvic posterior, left leg and thigh had some ~~laxness~~ lesions, but these were not sufficient to cause all this trouble. Was treated by an Osteopath who failed entirely to see the innominate lesion and so failed in treating the case).

The Cranial Nerves.

I. Olfactory Nerve. This gives us conditions that are

indicated by terms of Hyperosmia (abnormally acute sense of smell) and parosmia (perversion of sense smell) and anosmia (absence of sense of smell). Examination should always be made in these cases locally in connection with the posterior part of the tongue and nasal mucous membrane. The best way is to use a mild acetic acid or cologne water: spray this into the mucous membrane in one nostril and leave the other and test for the smelling function from that standpoint. Then take account of injuries that are associated with headache, nasal hemorrhage and anosmia. Anosmia is most commonly caused by acute or chronic catarrh, indicated by abnormal dryness of the mucous membrane, involving some disease of the fifth cranial nerve. The fifth is the starting point and is the first nerve involved. Parosmia is a subjective condition found principally in megrim insanity. Hyperosmia is nearly always associated with hysteria.

II. Optic Nerve. The retina is involved in Retinitis, which is secondary to Bright's Disease, Diabetes and Syphilis. On examination, using the ophthalmoscope, we find white spots of patches on the retina, due to hemorrhage or degenerative changes. In the chronic renal diseases we find albuminous retinitis, due to pressure of the albuminous deposit as an irritant. Functional blindness is found in uremia, hysteria, the tobacco eye, there you have the dimming of the vision without any apparent change in the eye structure night blindness, in which objects that are seen in the light, even if they are bright such as steel, cannot be seen in the darkness. This is one of the early and strong symptoms of optic atrophy

Optic Neuritis. The discs of the eye become swollen, there is hyperemia and dizziness of vision and this in some cases, as in alcoholism and spinal meningitis is a symptom of optic atrophy. Lesions involving optic chiasm. Here the fibres decussate, the fibres from the inner half of the retina passing to the center on the same side and those of the outer half cross over and pass to the center on the other side. Lesions involving the basal ganglia. These are (a) lesions in the upper and middle cervical (b) lesions involving the fifth cranial nerve, brought out by example by tenderness at the supra and infra orbital notches; (c) lesions involving the blood supply of the optic nerve from the vaso motor standpoint. Here the lesions are in the first, second and third dorsal or in the third and fourth dorsal.

III Oculi Motor. There are two conditions produced by lesions here -- Palsy or Spasm. The seat of the disease may be in connection with the basement portion of the brain or some peripheral point along the path

of the nerve. There are three forms of paralysis.

(1) An accommodation paralysis, where the pupil of the eye does not change to accommodate to light;

(2) reflex paralysis. Here the pupil does not contract in connection with light or when exposed to the light - (Argyle Robertson eye). This second case represents an interference with the reflex dilation, through the radiating fibres in connection with stimulation from the cutaneous nerves. In the first case the pupil does not diminish in size, because here the deficiency is in the sphincter action. In the first case your stimulation is sympathetic and the other case the stimulation is superficial and cutaneous. (3) Loss of the skin reflexes, e.g. as a test we have the pinching of the skin without and dilatation of the pupil. This is a localized accommodation.

In Nistagmus we have a spasmodic condition of the muscles of the eye producing rapid oscillation of the eyeball.

Complete paralysis of the oculi motor nerve gives a movement of the eyeball outward.

IV Patheticus (Trochlear) Nerve. This nerve is involved in connection with diseases of the nerve itself as it passes around the outer surface of the crus into the orbit; also by anemia of the blood supply to the nerve itself or by exudation in case of meningitis.

V Trigeminal. Here we find lesions in the nuclei of the origin, or more commonly, in sclerotic condition resulting from inflammatory diseases. Here we may have lesions of the first five cervical vertebrae.

VI Abducens. This nerve is affected by meningitis or tumors, producing a defective outward movement of the eyeball, hemorrhage into the nucleus producing paralysis of the ocular muscles or functional paralysis in hysteria.

VII Facial Nerve. Here we find lesions in the connection with the nuclei in the cortex or some pressure lesion along the path of the nerve, as in Bell's Palsy. Here we have facial spasm involving all the branches of the facial nerve, excepting in one particular case, when there is traumatism of one branch of the nerve.

Double facial paralysis is found only in few cases, i.e. where we have lesions in the pons or in disease of both ears. That may be secondary to a double Otitis Media or sometimes (seldom) Polypoid growths in the ear.

VIII Auditory Nerve. Lesion may be found anywhere from the nuclei of the origin in the brain to the distribution among the cilia in the ear. If we want to differentiate between the neurotic or neuritis and obstruction types of the eighth nerve involvement we test in connection with the bones in the head around

the ear. Plug up the ear tightly with cotton, then use a tuning fork and if the trouble is due to disease of the middle ear, wax impaction or obstruction of the eustachian tube, the vibration of the tuning fork over the vertex will be heard more distinctly on the deaf side than on the other side. The auditory meatus being all right. If you can get at it. If the auditory meatus is intact the case can be relieved.

IX Glossopharyngeal Nerve. In speaking of the lesions of this nerve we mean the testing of the distribution of the nerve in connection with the tongue. Have the patient put out the tongue and spray it with acetic acid or cologne water. Lesions of this nerve, except in paralysis are all peripheral.

X Pneumogastric Nerve. Its primary function is sensory and it is distributed either directly as a system as a vaso motor nerve, or through some other nerve or its branches as a motor nerve. This motor includes trophic as well as distinctly motor fibres. Its primary function is sensory and it has subsidiary functions, e.g. vaso motor in connection with the sympathetics and motor or trophic when it passes through or in connection with some other nerve, e.g. the other spinal nerves; has connection with the stellate ganglia and from there reflex trophic fibres. Along the lesions that we find in connection with the pneumogastric are the first cervical, fifth and seventh cervical, third fourth and fifth dorsal, third fourth and fifth ribs. There may be involvement of this nerve in connection with other nerves, as the sympathetic system.

XI Spinal Accessory Nerve. Here we have the internal branch joining the trunk of the tenth nerve and the external branch going to the sterno mastoid and trapezius muscles. Diseased conditions of this nerve cause complete paralysis of the sterno mastoid and partial paralysis of the trapezius. If the spinal accessory is completely destroyed we cannot get a complete substitute.

XII Hypoglossal Nerve. The principal conditions found in this connection in palsy of the tongue, secondary to catarrhal conditions involving the nuclear or intranuclear substance. Here we find lesions in the upper three cervical branches, (one or more) sometimes cortical conditions; may have some involvement in heart diseases through the descending noni branch and it is through this that traction on the tongue relieves heart condition in fainting, through its connection with the cardiac plexus.

Treatment of Cranial Nerve Conditions.

- I Olfactory. Best results are gained by controlling the blood supply by thorough treatment in the upper cervical region, with some accessory treatment in the upper dorsal (vaso-motor), also correct the lesions found in these regions.
- II. Optic. The lesions here are in the upper and middle cervical, involving fibres of the optic nerve that originate in the spine, or involving the retina and optic nerve through the fifth cranial, or, affecting the blood supply mechanically or through the vaso motor system. The most common lesions are subluxations of the third cervical and of the second and third dorsal.
- III Motor Oculi. The only way to affect the third nerve is through the superior cervical ganglion; it establishes connection with the fourth, fifth and sixth cranial nerves and may be treated through these nerves, or it can be affected by direct mechanical pressure over the eyeball. The lesions found are at the atlas and axis, affecting the nerve directly through the sympathetic connection.
- IV Patheticus (Trochlear Nerve. This is controlled also through the superior cervical ganglion in connection with the branches distributed upward to the carotid and cavernous plexuses.
- V Trifacial Nerve. Reach this nerve by treating directly over the inferior maxillary region in connection with contracted muscles in the cervical region and around the angles of the jaw; also the articulation of the cervical vertebrae.
- VI Abducens Nerve. This is controlled osteopathically at the atlas and through the superior cervical ganglion.
- VII. Facial Nerve. The most common condition in connection with this nerve is Bell's Paralysis. The nerve may be directly stimulated at the stylo mastoid foramen where it establishes connection with the great auricular, the fifth, ninth and tenth cranial and carotid plexus of the sympathetics. The facial nerve may be directly treated where it passes over the angle of the jaw. In treating Bell's Paralysis - (a) relieve the pressure around the stylo-mastoid foramen (relax the tissues) and the region of the parotid gland (b) stretch the muscles along the side of the neck and at the back of the neck, rotating the head and neck to remove venous congestion; (c) give strong extension followed by rotation of the head and dorsal region of the spine (d) stimulate strong inspiration, either volitional or otherwise; (e) give strong manipulation as high up under the angle of the jaw as you can reach, pulling the parotid, submaxillary and sublingual glands and the

nerves and blood supply to those glands.

Bell's Paralysis has a secondary effect, i.e. a defect in the salivary secretions.

VII Auditory Nerve. This we control principally in connection with the first and second cervical vertebrae. Lesions affecting this nerve are of two types - (1) an anterior condition of the first and second cervical, as strong contraction of muscles or increase of soft tissue also lesions in the upper dorsal, second, third and fourth through the vaso motors, representing the second type.

IX Glossopharyngeal Nerve. This is controlled anterior to the jugular veins. The lesions are found in the cervical and upper dorsal regions, also contracted conditions of the deep muscles of the anterior and lateral parts of the neck

X Pneumogastric Nerve. This nerve is best controlled at its point of exit from the foramen by inhibition in the suboccipital region, between the mastoid and transverse process of the atlas. Bend the head to one side, press in the finger and press the head back against it. We can also reach the nerve by direct treatment to it as it passes along the neck. It is best reached just below the greater cornu of the hyoid bone. The inferior laryngeal branch is reached at the inner side of the lower part of the sternum mastoid, it may also be affected by luxations of the first and second ribs; Tenth cranial fibres have also been traced out in connection with the spinal accessory nerve roots as low down as the sixth and seventh cervical. Perhaps when we completely know the tenth cranial it is really like the eleventh, giving a spinal branches of its own. If it could be dissected under the microscope, we might find branches as low as the fourth the fifth dorsal.

XI Spinal Accessory Nerve. This is controlled at the jugular foramen in connection with the first, third, fourth sixth and seventh cervical.

XII Hypoglossal Nerve. This is controlled in connection with its point of exit from the foramen also through treatment of the superior cervical ganglion.

Treatment of the Spinal Nerves.

Great Occipital is controlled at a point in the occiput between the mastoid process and the cervical vertebrae.

Small Occipital and Great Auricular are best controlled just below the mastoid process.

Great Auricular and Frontal Branch of Trigeminal units at the parietal protuberance, therefore, inhibition at that point is used to control headaches. These can also be controlled.

in the upper cervical by relaxing the muscles and giving strong inhibition in the suboccipital region.

In neuralgia headache apply gentle moving pressure in the suboccipital region until you reach the point of greatest pain, then continue steady pressure at this point until there is relief from pain.

Phrenic Nerve. In dealing with this nerve lesions are found principally in the third, fourth and fifth cervical. From these conditions we have hiccoughs. The treatment for this is inhibitory and the lesions should also be corrected in those areas: also put the patient's head downward so that the viscera will press up on the diaphragm. Inhibitory pressure will also be applied in the supra-clavical fossa, also between the seventh and tenth ribs, at the cartilage of the third rib, and at the point of the junction of the rib: also just behind the mastoid process and sometimes at the second lumbar. The second lumbar lesions are sometimes found in hiccoughs and there must be some point of nerve supply in connection with some point of nerve supply in connection with the diaphragm, i.e. some spinal connection. In some cases hiccoughs can be controlled by strong traction of the tongue. In treating a severe case of hiccough there are two main points to be attended to-
 (1) Apply strong pressure to the third, fourth and fifth cervical vertebrae, upward on the transverse processes, having the patient sitting.
 (2) Place the thumb between the shoulders in the region of the posterior attachments of the diaphragm and raise the arms strongly above the head, pressing with the knees in the back. If this does not control the hiccoughs, continue the same treatment down through the lumbar region.

Diseases Of The Eye.

Examination of the eyes should be from both objective and subjective standpoint.

The subjective standpoint represents the history of the patient's eyes. In children we never find an absolutely perfect eye - every infant has a tendency to myopia.

Examine the eyes separately - notice the angle at which each looks at an object. In this examination place the patient in front of a window - stand at the side or behind the patient, and have the patient's head inclined slightly backward, and examine the eyes as the light falls uniformly on

them. Use a small mirror or bright object to modify the light -- this will determine the equality or inequality in the two eyes-- also if the eyes move uniformly.

Examine the eyelids to see if the margins are normal: also the condition of the cilia and conjunctive. To examine the lower half of the ball or lid, pull the eyelid down at its center, and then apply traction at the inner and outer canthi - notice particularly if the eyelid or ball moves uniformly. Under the traction there is sometimes a resistance at the external and internal canthi -this may also be found in the eyeball. In examining the upper lid evert it -- take the cilia between the finger and thumb and turn it inward, and apply traction at the lower lid. Next examine the corner of the eye to see if it is transparent - note particularly inflammation, if present, or ulcer, in small patches (use the head magnifying glass). Examine the iris to see if the pupils are equal, and if they act together, this can only be done with the ophthalmoscope

In some cases, if there is eye disease, and disease of the optic nerve, we must also determine the range of the vision.

Place the patient before a blackboard so as to have the eyes from 12 to 15 inches from the board, then cover the eyes with something that will not come in contact with the eyes. Make a mark on the board, and ask the patient to look straight at the mark while you project at the side of the patient some substance, like a piece of chalk, until the patient can see the object - this gives the range of vision. Then mark this point on the board, use this also above the eyes. This circle, whether regular or irregular represents the range of vision. It will enable us, in conjunction with the movements of the eyes, in accommodation with light, to determine the weak or strong points in the eyes. This circle may be zigzag shape, and it is of importance from the standpoint of testing the muscles.

In examining the eyes in connection with ulcers, the main point is in the change of lens, or in the structure of the eyes. The best method is the use what is called in optics the "Method of Oblique Elimination".

Have the patient sitting in a dark room, then carry the rays of light from a lamp by means of a convex lens with a one inch focus. Hold the lens between the thumb and finger close to the eye. so as to focus the rays about one inch from the eye then concentrate the focused rays on the part to be

examined, in the oblique direction and continue this all over the lens (portion of the eye) Notice the reaction of the lens to these focused rays of light.

In examining the conjunctiva, evert the eyelid, and bring pressure to bear on the eye either from below or above - notice whether in the application of pressure there is an exudation, or whether the conjunctiva becomes lighter or darker in color. If it becomes lighter, we have an arterial congestion venous, if it becomes darker, if there is an exudation the inflammatory processes are established.

The second point in examination is to note the Physical Condition of the Eye. The defects are;

(a) ACCOMMODATION.

In the normal eye the rays focus on the retina, so that while the object be may be near or far away, the eye has the power of regulating its focus point. (Distinguish this from the focal point on the boundary of objects.)

This power of accomodation is very frequently deficient, it is almost say to say, that it is always deficient in every one. This deficiency is usually found in connection with the ciliary muscles, interfering with the movement of the lens When the divergent rays of light from a near object enter the eye, they require more distinctly bent in order to focus on the retina; to do this, the ciliary muscles must reflexly become retracted, drawing up the choroid and the iris, and pulling on the internal coat of the cornea, the result is that it becomes more spherical, and there is an increase in the antero-posterior diameter; the result o f this is the focusing of the rays of light. Any variation in the ciliary muscles action will modify the focusing power, and change the focusing process.

(b) REFRACTIONIN THE EYE

This represents the deviation of light rays from a straight line, as these rays pass obliquely through transparent media of different orders of density. These media are the cornea, aqueous and vitreous humors, and the crystalline lens. In order that the eye may have its normal refraction, it is necessary to have a number of conditions satisfied.

1. The Curvature of the Surface Refracting.

For example - if there is a horizontal corneal axis, it is not the same as the vertical. The rays of light passing through these two axis will have different focal points, and instead one focal point, we will have two, resulting in difficiency of vision from the refractive side.

2. The Antero-Posterior Diameter Must be Normal

Applies to the refractive media; if the diameter is too great, the rays will focus in front of the retina, if too small, the rays will not focus at all (because they cannot pass behind the retina). In both cases the vision is deficient, because it is blurred; the change in focal points does not give unitary vision.

3. The Media of Refraction Must be Clear

This applies to those obstructive conditions in the eye media, e.g. solidification or partial solidification of fluids or growths of films. You can diagnose the condition - for example - in case of cataract, the eye will pass through all changes from first primary color to last color - from violet to red. In one case the patient could see first a blurr of light, and then could distinguish color - one eye could see red predominant, the other eye blue. If the condition of the eye is normal, the eye physically is said to be metropic.

Any deviation from this physical condition is represented by a particular variation, e.g. Hypermetropia - is a condition in which the rays of light are parallel; the rays never focusing if the eye is at rest. These parallel rays come from the object at a distance of about twenty feet from the eye, if the rays come from an object nearer than twenty feet they diverge, and in order to focus any of the rays, the eye must accommodate itself to the new distance. In this case the antero-posterior diameter is too small, consequently the eye must accommodate all rays coming from a distance greater than twenty feet (under twenty feet have power of focus). By the contraction of the ciliary muscles the lens capsule is relaxed, the antero posterior diameter is increased, the surface is made more convex, and this keeps the focus of the rays on the retina; if the contraction of the ciliary muscles the lens capsule is relaxed, and the antero-posterior diameter is increased, the surface is made more convex and this keeps the focus of the rays upon the retina, if the contraction of the ciliary muscles must be kept, up, then the eye becomes overtrained, giving headaches almost persistent - only relieved by relieving the tension of contraction of the ciliary muscles. This condition is in some cases congenital, in other cases the result of injury, the effect of exposure to cold, causing abnormal tissue contraction, may often be felt in coming from warmth out into great cold.

(c) Myopia.

Here the antero- posterior diameter is too great, and the rays focus in front of the retina

The most common cause of this is too great convexity of the cornea or sclerotic relaxation (from physical side) this condition is also congenital, probably all eyes at birth being to slight extent in this condition. It may be acquired principally in connection with paralysis of the ciliary muscles - intra orbital conditions, as of tissue, blood, lymph, constitutional disturbances, such as rheumatism, - the toxin of rheumatism causing loss of tonicity. In myopia the eye is unable to see distant objects, and if any attempt is made to accommodate the eye to distant vision, the result is headache and blurring of the vision.

(d) ASTIGMATISM

Here the curvature of the cornea or lens, or both, becomes altered - the focusing of the rays of light taking place at different points - the diagnosis of this condition is based on an examination of the axis or axial of planes of the eyes - the disk used by oculists being this cut.

From the symptom side we have headache, inability to use the eyes with concentration for any length of time, this is particularly true in near vision. The cause of the astigmatism in general is an inequality of the contractibility of the ciliary muscle or muscles, and the irritant is generally some toxic substance.

(Dr. J.M.L. questions cause as every being direct).

Astigmatism is much more easily corrected osteopathically than is myopia or hypermetropia, the latter being the most difficult of all we have to deal with -- this is a reaction from an original child myopia.

(e) PRESBYOPIA

Here is a senile condition of the eye in which the patient complains of an inability to see near to the eye, here the condition is to be traced up to the loss of tone in the ciliary muscle to accommodate itself to the elasticity of the lens.

Physiological conditions of the eye

Diseases of the eye represent modifications that are produced from the anatomical or physiological side, the principal points of lesion being the upper and middle cervical, and the upper dorsal sometimes muscular, sometimes osseous, sometimes both. In some cases the entire cervical region is involved, in some cases we have general reflex reaction, the

cervical region being the region of reaction from some other part, or parts of the body.

Now, the point that you require to remember, and note from the standpoint of treatment is, that you will not accomplish anything by treating in the cervical region - even if you correct the condition in the cervical region you will not correct the vision; you require to go back to the cause that produced the condition in the cervical region, and then produced the condition in the eye. That applies to all conditions, particularly where you have diseases of the reflex order.

Sometimes we find individual luxations in the cervical vertebrae; e.g. sometimes luxations of the superior maxillary, or of the first rib or the clavicle. These latter are very common conditions, particularly where the individual eyes are involved. One lesion that is very common is a lateral lesion of the entire cervical region, with intense contraction of the muscles on one side, and resulting hypertrophy of the on one side associated with the upper dorsal region, in some cases the fifth cranial nerve, in motor derangement, for example, strabismus, diplopia; the eye strain is the exciting cause, lesions being found principally at the 3rd cervical and upper dorsal, e.g. in strabismus the most common lesion is found at the 2nd dorsal, in diplopia, at the 2nd dorsal.

This is one of the unique lesions in connection with the eye - that is the only case in which we find the axis involved - in all other cases we find the atlas 3-4-5-6-7- cervical involved; these areas of the spine are closely related to the eye through the nerves blood and lymphatics. Different types of lesions are found e.g. blood lesions by direct impingement on vertebral arteries, by disturbance of the vaso motor nerves of the lymphatics, particularly in the latter case the last two cervical and the clavicle obstructing the lymph flow to and from the head.

The superior cervical ganglion is affected through the atlas, axis and 3rd cervical. This affects the eye because the ascending sympathetic chain sends branches out in connection with the carotid and cavernous plexuses, sending minute fibres to the eyeball; also filaments in connection with the distribution of the ophthalmic arteries.

The ciliary ganglion lies just behind the orbit, between the trunk of the optic nerve and the external rectus muscle - hence any pressure on the eyeball backward into the socket by enlargement, dilatation,

increased intraorbital tissue (fat substance, for example, posterior to the eyeball) will affect the ganglion directly,

This ganglion is connected directly with the 3rd and 5th cranial nerves; also with the sympathetic, representing the regional sensory, motor and sympathetic centres for the eye regional in the same sense that we apply it to the parts of the spine where you have nerve impulses thrown off in the different centres, and then it becomes the center of distribution, and that is one of the effects you get by pressing the eyeball back into the orbit - you get direct pressure in connection with the ciliary ganglion.

The 3rd cranial nerve furnishes the nerve supply to all the muscles of the eye except the superior oblique and the external rectus. These nerve impulses contract the pupil of the eye by supplying the sphincter muscles of the iris. The great nerve centre of this function is the superior cervical ganglion - in other words the sympathetic function. That is why lesions affecting the Sympathetic system produce strabismus. This is a motor condition. We see this in cases where there is fullness of one side of the neck; in other cases we find the muscles tightly contracted on the other side, pressure over the muscles causing pain to the eye. This is found particularly at the 4th cervical. between the 2nd and 3rd cervical; in the upper dorsal lesions we find the muscular and osseous lesions - less commonly the first four dorsal dorsal and still less commonly the 5-6-7.

Then we have lesions at the 2-3 dorsal, for example, muscular bluing (contraction and hypertrophy) posterior conditions, and anterior conditions at the 2-3 dorsal.

Then we have a 1st dorsal lesion, principally muscular, sometimes the slight turning upward of the spinous process; (that, of course, will mean the dropping of the vertebrae), this follows and is always associated with the prominent posterior last cervical. This is one of the most common and marked lesions where the heart is involved - for example, exophthalmic goitre.

Then we have lesions of the upper ribs, involving any or all of the first six ribs - the most common are those involving the 1-2-3 ribs.

In nutritional disturbances of the eye - for example, conjunctivitis, glaucoma, cataract, and in cases of structural changes, for example, pterygium and astigmatism, there are produced by failure to nourish the eye, traceable to the sensory side,

because the cause is on the sensory side, it is the over stimulation, which is primarily the same as lack of stimulation, because it is carried to the point of inhibition; we also find the same condition in diplopia.

Dilator fibres to the eye act in connection with the 3rd cranial nerve, originating in the ventricles of the brain, then passing to the medulla, to the cervical region, and along the anterior nerve roots of the upper dorsal nerves.

In Motor derangements - for example, strabismus diplopia - the eye strain is the exciting condition, lesions being found principally at the 3rd cervical and upper dorsal - for example, in strabismus, the most common lesion found is at the 2nd dorsal; in diplopia the 2nd cervical; in other cases we have the atlas or some other cervical. These areas of the spine are closely related with the eye through the nerves, the blood and sympathetics.

Different types of lesions are found e.g. blood lesion by direct impingement on the vertebral arteries, by disturbance of the vaso motor nerves, of the lymphatics, particularly in the latter case the 6th and 7th cervical and the clavicles, obstructing the lymph flow to and from the head.

The superior cervical ganglion is affected through the atlas, axis and 3rd cervical. This affects the eye because the ascending sympathetic carotid and cavernous plexuses, sending minute fibres to the eyeball, and also filaments in connection with the distribution of the opthalmic arteries. The ciliary ganglion lies just behind the orbit, between the trunk of the optic nerve and the external rectus muscle; hence any pressure on the eyeball backward into the socket by enlargement, dilatation, increase of intracorbital tissue (fat accumulation, etc) will affect the ganglion directly. This ganglion is connected directly with the 3rd and 5th cranial nerves; also with the sympathetic representing the regional sensory, motor and sympathetic centres of the eye. Pressing the finger on the eyeball, we get direct action on the ciliary ganglion. The 3rd cranial furnishes the nerve supply to all the muscles of the eye except the superior oblique and external rectus; these nerve impulses contract the pupil of the eye by supplying the sphincter muscles of the iris. The great nerve center of this function is the superior cervical ganglion (or sympathetic function) this is the reason why lesions affect the sympathetic system, resulting in strabismus, though strabismus is a motor deficiency, but a result of an over-stimulation

of the sensory system.

The sympathetic nerve fibres reach the eye through (1) the cervical sympathetics and (2) ophthalmic branch of the 5th cranial nerve, and (3) the long ciliary fibres: hence, in defective accommodation of the eye and in eye strain we have lesions in the cervical and upper dorsal region.

The ~~xxx~~ ilio-spinal centre is located in the lower cervical and upper dorsal regions, the fibres in connection with that centre extending all the way from the fourth cervical to the 4th dorsal.

Note that particularly, because as a general rule, the ilio-spinal centre is supposed to be limited to the 2 - 3 dorsal, this may be the principal point, but it extends from the 4th cervical to the 4th dorsal inclusive.

According to Quain, pupil dilators pass out from the 2-3-6 dorsal nerves, and these are joined by accessory fibres from 6-7-8 cervical nerves.

Motor fibres to the involuntary muscles of the eye and the eyelids pass out from the first five dorsal nerves.

The retinal fibres pass out from the sympathetic system through the superior cervical ganglion, passing on to the Gasserian ganglion, and establishing the 5th nerve, then passing up to the eye in connection with the fibres from the Gasserian ganglion.

I say "cranial" because that is not the point where the spinal branches come in contact with the sympathetic system - that is a mistake made by some in writing on the subject - the spinal nerve connections are established down outside of the cranium, before the nerves enter the cranium.

Stimulation of the cervical sympathetics produces from the physiological side constriction of the retinal arteries; stimulation of the dorsal sympathetics produces dilatation.

We must note, in both cases, the sympathetic system is the medium of application of the stimulation - in one case in the cervical - in the other case in the dorsal - and you get this constriction and dilation effect. That will explain the seemingly contradictory result that we get in articulation of the cervical and dorsal regions.

Determination of the nature of the result is not all from the sympathetic system - if you are stimulating in relation to the sympathetic chain, it will do the work of determining whether it is constrictor or dilator in its result. Another example is the seemingly contradictory practice of controlling a diarrhoea - sometimes it is said to be controlled by stimulation and sometimes by inhi-

bition. What is determined entirely by the sympathetic system.

What is it that will determine it is constriction or dilatation that will apply to the eyes, and it also applies to the splanchnic system? It is the vaso motor system that determines. In other words, it is the condition of the blood - it is the only index to what is going on in the vaso motor system.

We have discussed the different types - secretory diarrhoeas, motor diarrhoeas, etc. The medical doctors have a favorite remedy - some one would have salts, another calomel, etc. That is not the practice of medicine - it is the practice of imitation - he has gathered up that this is a cathartic. If he knew the practical application to the body he would know that salts would be good in some cases and bad in other case, that depends upon the type.

Where you have thorough control of the vaso motor system, salts would be the best thing he could use, because you get your cure or control of constriction by taking out some of the blood serum - salts throw serum out of the mucous membrane of the alimentary canal into the canal itself. Suppose you had an anemic patient, and that patient goes on using medicine for ten or twelve years, you would have paralysis of the alimentary canal, driving out the blood and drying up the surface of the alimentary canal. You should get some medicine that would cause motor action in the alimentary canal without any interference with the blood; calomel would be better, or aloe, but from the standpoint of selecting the remedies that would do the least damage, you would have medicines better than salts. We must apply this principal in the Osteopathic field - we are taking the physiological body and judging what to give - that is the only way to give a remedy, not matter what practice you are giving.

In vasomotor disturbance of the eyes - for example, retinitis, the most simple and common of the retinal disturbances - the lesions we find may be in the cervical or in the dorsal region, but in either case there is a difference. If it is in the cervical region, we must trace out the condition through the 5th cranial nerve - that is a case where you have almost a chronic neuralgia - where it is in the dorsal region, we can trace out the connection through the spine - that is, you can go down to the stomach, the heart, the liver - those organs - for the exciting cause of the eye trouble.

The 5th cranial nerve sends its branches to the eye through the sympathetic system, the cavernous

plexuses providing vasomotor and trophic fibres to the eyeball - hence, division or pressure, inhibition of the 5th cranial nerve will produce ulceration because of the obstruction of the nutrition to the eyeball, the lachrymal glands and the conjuction.

All nutritive disturbances of the eye as well as the optic atrophy, must be traced in some way to the 5th cranial nerve. One common condition that we find in this case is the slipping of the inferior maxillary, or some lesion of the atlas, impingement on the fibres of the 5th cranial nerve.

Lesions found in upper dorsal and cervical regions affect - (1) The superior cervical ganglion, and through it the sympathetic connections with the local fibres to the eyeball, and also the plexuses, both Sympathetic and cranial.

(2) In connection with the cervical spinal nerves and their branches upward to the eye.

(3) The centres for pupillary contraction is located in connection with the inferior cervical ganglion from what we find in some Osteopathic literature - in Rigg's and some of the other books, but I believe that is correct - it is the sympathetic, and not the spinal as is claimed by some of the Osteopaths.

(4) The centre for pupillary dilation is found in the inferior cervical ganglion and in conjunction with the last two cervical nerves, and the first three dorsal nerves.

Now, you see that is different from what we generally are taught - pupillary dilators are supposed to be located at 2-3 dorsal, and it is if your Sympathetic connection is in a condition of integrity; if your upper three dorsal nerves are operating through the inferior cervical ganglion - but if it is not working normally, as a sympathetic ganglion, you do not get any.

(5) Motor fibres to the eye (spinal) pass from the upper dorsal nerves to the involuntary muscles of the eyelids and eye orbit.

This means that you control the eye spasm of for example, hysteria, convulsions, apoplexy, etc., and where you have the jerking movement of the whole eye you control that by inhibition at the upper dorsal.

(6) The 5th cranial nerve functions only in relation to the eye through the sympathetic system, and largely, if not altogether, through the superior cervical ganglion.

Here we have the same limitation as in dilatation; the centre is not in the superior cervical ganglion, but it in relation to the 5th cranial nerve which lies back of it.

(7) The constrictor fibres in connection with the retinal arteries pass along the cervical Sympathetic

chain.

(8) The dilators of the retinal arteries pass from the dorsal sympathetic chain. All of these fibres can be reached only in the superior cervical ganglion, except

(9) Those that can be reached only through the sympathetic chain - that is, the spinal nerve branches; in other words, those spinal nerve branches from the lower cervical and upper three dorsal; these you can only reach in connection with the chain.

Lesions of the first three cervical vertebrae always operate through the sympathetic system.

Visceral Lesions.

Lesions corresponding with the stomach, heart, kidneys and the pelvic organs produce reflex results on the eye through the vasomotor system, and if the condition is permanent in the eye there is an alteration of the blood pressure (local). The alteration is wider than the eye alone - is more extensive, alteration of the blood pressure of the eye and of everything contributing to the eye, as of 5th cranial.

The clavicle and first rib lesions produce their effects through the lymphatic system, obstructing the flow from the deep cervical lymphatics into the thoracic on the right lymphatic channels. This reacts on the eye, preventing the normal eye metabolism.

Now I believe that if you will study the cases of cataract, that you will find that is the origin of the cataract condition. - It is supposed by many who write of the eye, both Osteopathic and medical, that it is toxic. That is true, but it is toxic secondarily, and can be demonstrated in treatment.

Mammary Gland conditions will also affect the eyes reflexly in connection with vaso motor.

Salivary gland connections will also affect the eye in a similar way.

Now the old theory was that glandular disease affected the eye through the lymphatic system - the affect is directly on the sympathetic system. In the parotiditis condition we have an excessive action of the cerebro spinal system, consequently the reaction on the sympathetic system, checking - this will naturally react on the eye - it may react on other glands in the body, just the same as the eye, in a reflex way.

Affection of the thyroid bodies reacts on the eye - (a) Directly in some cases in connection with the 1st rib and clavicle lesions - here the affect on the eye is to be traced to obstruction to lymphatic drainage.

(b) Thyroid conditions affect the eye through the

general dilator effect on the thyroid gland, on the sympathetic system - there we trace the condition through the middle and superior cervical ganglia; lesions from second to seventh cervical. (c) Thyroid conditions affecting the eye from the toxic standpoint. This is probably the cause in exophthalmic goitre, and also in those cases where we find thoracic carcinoma secondary to the thyroid condition - that is to say, the condition of the thyro bodies. Now, that traces out all the causes we can trace in eye diseases in general.

The Eye is an Index to the Body

The iris represents a diaphragm with two functions;

- (a) diaphragm of the optic apparatus,
- (b) a diaphragm on which is represented conditions of the body, representing different parts of the body structure.

Therefore a diaphragm of the iris when divided up into segments represents each organ from a photographic stand point, radii of the circles representing different sections and lesions of the body, e.g. lesions associated with the eye, ear, nose, neck, lung, larynx, liver and gall bladder kidney and bladder, esophagus, spleen, foot, etc.

Signs and characteristics noted on the iris are classified as follows;

- (a) White spots in the form of small white clouds, misty.
- (b) White lines well defined.
- (c) dark shadings, also misty, these shadings are always enclosed by white lines.
- (d) Black spots well defined.
- (e) colored spots, varying according to conditions represent variations of the eye to changes in the body and its environment. White color always indicates increasing flow of blood to the tissues, a local rise of temperature, hyperemia, diapedesis, infiltration, and congestion. When the blood supply becomes normal, the white color disappears.
- (a) White spots represented by (a) are found in acute diseases, during recovery we find original coloring reappearing.
- (b) White lines are developed in connection with acute inflammations with more or less pain tending to chronic and aggravated in connection with stimuli. During process of healing lines become fine and delicate. If they persist they indicate lessening of resisting power.
- (c) Dark shadings enclosed by white lines indicate

some form of tissue change, as degeneration.

(d) Variation in color indicates tuberculosis

(e) Coloration when marked indicates loss of substance in structure of the iris. when there is thickening in colored lines around pupil that is an index to stomach disturbances. small semicircular lines parallel with the periphery of the iris is index to nervous diseases.

Colored spots are frequently an index of drugs not eliminated from the system, e.g. iodine shows up in brown red spots; quinine, in yellow spots; strychnine and arsenic in white spots and mercury in gray spots. Black spots are generally very hard to see and small a strong glass being needed to distinguish them.

Basis of these spots and lines is to be traced to the physiology of the eye, that is to its nerve supply. The iris is supplied by long and short ciliary fibres originating from, (a) ciliary ganglion, (b) Casserian ganglion, this ganglion being supplied by, (a) fifth cranial nerve, (b) sympathetic system, (c) in cerebrum via the commissural fibers another communication is established between the eye and the nerve tracks of the cerebro spinal system, The fibers going from all parts of the body through the spinal cord, therefore the commissural fibers from the cerebral field to the optic tracks represent fibers of expression or fibers of corporal expression in the eye.

Microscopic examination of a cross section of the iris demonstrates that dark, black, and colored spots in the iris are caused by degenerative changes that take place in the substance of the nerve filament as it terminates in the iris, that is neuroendothelial and epithelial degeneration.

In attempting to find out regions of the eye that correspond with the different organs of the body we are dependent entirely on clinicle examination. Clinicle observation enables us to examine certain organs with the iris, certain types of color or spots in connection with a particular portion of the eye involved. Every impression on the optic nerve by deflexion causes evolution or reflex movement of muscles in somepart of the body. Therefore every muscle in the body has its representative field in the iris. The same thing is true of every other part of the body. All processes that go on in the different parts or organs of the body send out impulses which are carried either to the nerves of the eye or through sympathetic connection to the eye. According to this the nervous system controls and reports all functions from the different parts of the body to the iris, the iris being the only part

of the body where the small nerve filaments are perceptible, hence the iris represents the only diaphragm on which is pictured with absolute accuracy the conditions of the body.

The white lines of different types on the iris represent thickened nerve fibers and expansion of these in increased activity of the nerve supplying the structure. Black lines represent degenerative changes in some field as mentioned above. Colored spots or colors represent either, (a) inflammatory or congestive changes, (b) stages in degeneration.

Conclusions are as follows:

- (1) Iris represents mirror in which is reflected all conditions of the body.
- (2) Where subjective symptoms cannot be obtained, deaf people, or animals the eye is the subjective symptomatology book.
- (3) By watching the eyes periodically we can determine character of the history of the case and in some cases determine prognosis. In this way the eye is always best means of general diagnosis.
- (4) Color of the eyes taken in general is an index of the racial characteristics, e.g. the darker the eye the less resisting power in the body.
- (5) We have means through the eye, in many cases, of determining impending death, the iris of the eye always changes previous to death and this change is taking place for a considerable time before death. We have increased density of color.
- (6) The eyes are means of determining toxic differentiation, e.g. lead operates more injuriously on the stomach in connection with the intestines than any other part of the body as tested through the eye, mercury tends to effect the brain skin, superficial glands more than any other part of the body. It enables us to determine that elimination of drugs from the system takes place by a very slow process and it enables us to determine that the accumulation of drugs in the system persists for a long time and in most cases how the accumulation does persist, that is whether it represents congestion or degeneration.

Special Types of Diseases.

1. Those diseases that are external to the eyeball
- a- Diseases involving the ocular muscles - This is brought out principally in connection with diplopia and defective movement of the eye. Here we have an inclination of the head to the paralyzed side, and drooping to the upper eyelid. This muscle condition may be differentiated from strabismus, by asking the patient to turn the eye in various directions; if the eye is normal the patient will be able to turn the eyes in all directions, if the eye muscle is

paralyzed there will be a lagging of the eye, and the nature of this movement will indicate which muscles are involved.

If there is a convergent squint the loss of power is usually in the external rectus muscle, and a nerve lesion will be associated with the sixth cranial nerve.

Paralysis of loss of power in the superior oblique muscle, involving the fourth cranial nerve, will be indicated by imperfect movement of the eye downward and outward. In testing this, place the empty test frame on the eyes, then put a deep red glass in front of one, and a deep blue glass in front of the other eye, holding a flame before the patient; the colored glasses will make the patient see two objects, and the position of the false object will enable us to determine in which eye the paralysis is.

That does away with the idea that is common among some opticians of putting on a blind and allowing the eye to see - that is not a good thing to do. It is necessary to close up one eye (close up both for the time being), to find out which eye is involved in the squint; cover alternately to two eyes and watch to see if the separate eye rotates into a new position from that in which it was before being put in use. In this test an apparatus commonly used by opticians consists of a cylinder of the testing frame, the other side being left open. When the patient looks at the light (or into space) or at some object - if the eye is normal there will be red streaks of light drawn across the frame; if the eye is deficient, the red streaks will be separate - that is, they will appear as a moving object or as moving lines entirely separate by themselves.

The causes of squint, traced down to the original cause, may be either hereditary or acquired syphilis - that stands at the head as the greatest of all causes, in children with hereditary squint it is likely to be the cause in nine cases out of ten. Also a localized neuritis, due to some injury or produced by cold or rheumatism, the lesions that are found are the maintaining lesions, and will be corrected to some extent if you can correct the cause that lies behind.

There is a functional squint that you will find in epilepsy, sometimes as a premonition - here the attack is coming on in a milder form; or you have a functional squint in the after effects of spinal meningitis, where you have partial paralysis of a portion of the body - arm, limb, etc. By functional

of deviation is best found by testing ^{with} the Maddox rod. If the same constantly deviates, the strabismus is said to be constant: if one eye alternates with the other in connection with the deviation it is called "alternating Strabismus". This latter is a functional type: there is one interference with co-ordination in connection with the muscular system in the eye - lesions here would be in the posterior quadre bodies and the optic thalamus.

c. Diseases of the lachrymal apparatus - The lachrymal duct is composed of cartilage and bone lined with mucous membrane, continuous with the mucous membrane.

Stricture is the most common type of this disease, and the most common cause is catarrh, either the result of nasal catarrh, or conjunctivitis. This if secondary catarrh causes a thickening of the mucous membrane, and lessens the lumen of the canal. The symptoms that we find is excessive lachrymation, which ever flows the lower margin of the lids. In some cases it is not due to obstruction of the duct but to contraction of the skin or subconjunctival tissue. If the mucous membrane of the lachrymal sac is inflamed, there is pressure from the fluid: the fluid is retained, and there is a tumor fluid formation: the abnormal accumulation of fluid coagulates, and the result is a tumor. Sometimes exudation takes place: if the exudate becomes purulent we have localized temperature, intense pain and swelling - this may terminate in a regular abscess formation. Sometimes instead of abscesses formation the surrounding tissues are involved, and there is a general inflammatory condition in all of the adjacent tissue structures. If the abscess is left to itself it will discharge, and in most cases result in the formation of a fistula, extending from the lachrymal sac to the surface, and result in continued pus discharge.

d. Diseases of the Eyelids.

The most simple involvement of the eyelids is ecchymosis, following or resulting from traumatism. This is not a congestion but extravasation of the blood of the surface of the eyelid, either internal or external.

Edema of the eyelids - is found in connection with and secondary to kidney diseases, diabetes. This may be due to a reflex from some derangement of the cranial nerves or interference with body nutrition in these kidney diseases or disturbances of the lymphatics. In the last case the condition is more likely to be direct - that is due to some obstruction or lesion interfering with the lymphatic system: the

other types are reflex.

Chalasion - This is the name that is given to cystic conditions where we have small cysts developed on the lid around the margin: the cause is some type of constriction, generally in the ducts of the Meibomian glands. There is no pain, but if the cyst becomes large the lid may become rigid and cause pain. In some cases the eye is closed on account of the rigidity of the lid.

Ptosis - Here we have drooping of the upper lid due to paralysis of the levator muscles or muscle. This muscle is supplied by the 3rd. cranial nerve. and the common cause is some obstruction causing pressure in connection with the 3rd cranial nerve. or some cerebral lesion involving the 3rd cranial nerve.

One peculiarity of Ptosis is that it generally comes on as a premonitory system of some other condition that will develop later. The first sign or symptom is the inability to move the lid. This expresses a cortex involvement - that is, a central or cerebral involvement. When we find the inability to move the lid in uniformity with the other lid - that is, you can open the eye half, or close the eye half, but cannot open or shut the eye entirely. This indicates a deficiency in co-ordination, and points to a lesion in the cerebrum or in some of the basal ganglia.

Trachoma - This represents a condition which the cilia are distributed in different directions. There is a type of this which is called trichiasis, in which there are irregular rows of cilia in connection with the eye - not one, but double rows, or irregular. We also have a type in which there is partial or complete inversion of cilia, the margin of the lid and the cilia being both inverted. This is a sign or symptom of a condition which is associated with chronic conjunctivitis, where the conjunctivitis dries up the conjunctival membrane, and you have a reaction as well as contraction of the membrane.

Treatment Of The Eye In General.

Anatomical lesions are found anywhere from the 6th dorsal to the occiput, including the ribs. In diseases of the anterior part of the eyeball and the appendages (muscle, eyelids and lachrymal glands), the lesions generally found are in the upper cervical region - for example, in conjunctivitis a very common lesion we find is 1-3 cervical, and we are discussing that from the anatomical side. We also find lesions involving the 5th cranial nerve, the most common type being subluxations of the atlas, axis, 3rd cervical, subluxations of the inferior maxillary in connection with the deep muscles lying in the basi-occipital region and extending anterior along the upper half of the neck. A common symptom of superficial eye trouble is at the junction of the superior and inferior maxillary - this represents the involvement of the inferior maxillary. This can be treated by opening the mouth against resistance - this will relieve pain.

The first general point in treatment of all eye diseases is the thorough articulation of the cervical and dorsal vertebrae down as low as the 6th dorsal - this is best applied by articulation with the patient sitting position -

1 Place the thumb against the transverse processes of the cervical vertebrae, apply strong pressure and rotate the head with the other hand. In the dorsal region give similar treatment, using the arm as a lever. Then put in your thumb at first dorsal between the spine and transverse process and elevate the arm back as far as you can, and then down and backward - that gives you the extension and articulation of the vertebrae at the same time.

2 Open the mouth against resistance, causing the patient to close the mouth while you keep up and increase the pressure. This is a strong stimulation treatment to the facial part of the 5th nerve.

In diseases of the inner eyeball lesions are located principally in the middle cervical and upper dorsal for example, in cases of pupillary involvement we have 4-5 cervical lesions and 2-5 dorsal lesions. The pupil of the eye may be contracted by strong stimulation at the 4-5 cervicals, and it may be dilated by inhibition at the 2-5 dorsal. This is a substitute for atropine used by opticians.

3. In the majority of eye troubles we find them associated with lymphatic conditions in the cervical, supra-clavicular and axillary regions - axillary lesions, for example, found in connection with the clavicle, and cervical in the last three cervical vertebrae or muscular lesions in the region of the middle and inferior cervical ganglia.

4 There is a close relation in many cases of eye trouble between the internal secretion of the mammary gland and the eye - this is brought out in the field of experimental physiology and surgery: the removal of the glands results in weakening of the eye; on removing the glands the eye will soon become affected, and this condition is incurable.

In diseases involving the mammary glands, and secondarily the eye, we find the lesions of the 1st, 3d, 5th and 6th ribs, separation of the ribs or anterior bulging of the ribs: the pigeon chest interferes with the blood circulation to and from the mammary gland. You will find in some peculiar shaped chests an entire absence of the mammary gland development.

5 Structural changes of the eyeball such as we find in myopia, hypermetropia and astigmatism are dealt with principally through the re-establishment of the blood circulation through the vasomotor system: consequently you get lesions principally in the vasomotor areas - for example, the atlas, and 2-6 dorsal.

In corneal astigmatism, on the other hand, there is always some involvement of the 5th cranial nerve, because the 5th is largely vaso-motor itself, probably, in connection with the sympathetic connections, the ganglion distribution and the fibres distribution we find from the 5th cranial nerve.

In these cases of structural lesions the treatment must be directed principally to the equalization of the nutritive distribution in connection with the cornea, crystalline lens and the humors of the eye. These are also typical conditions that we find in cataracts due to vaso-motor lesions obstructing the circulation. The treatment involving the correction of the lesion, if there is any, and the stimulation of the circulation so as to cause absorption - this latter point implies stimulation of the venous and lymphatic circulation - in other words, attend to the thorough drainage of the eye. The strongest venous and lymphatic point for drainage is at the outer external canthi of the eye, and about half an inch below the eye itself: with strong pressure there you reach the venous and lymphatic circulation. You take a case of puffed eyes in kidney trouble. With patient on back put your thumbs on each side at that point, and you can generally drain all around eye. That is an indication of the fact that we have in some way a command of the venous and lymphatic drainage, and that is one of the strongest treatments you can apply in cataract, because there are two points that require, to be attended to - drainage and increased blood flow to the eye. Drain to the angle of the jaw, and then along the venous path on the neck.

In stimulation of the blood to the eye the best method of treatment is -

1 General circulatory treatment. You can never cure an eye case without a general treatment - you can lay that down as an absolute principle.

2 With the patient on the face - apply stimulation strongly to the spine from below - begin down at the coccyx and articulate the whole spine to the occiput, and generally give that treatment two or three times to get the effect on the spine -

3 Localized treatment to the eye itself - around the orbit of the eye and stretching between the two canthi: light tapping and light vibration over the eye to stir

up receptivity of the eye to the nerve and blood force.

4 Strong articulation in the upper dorsal region, accompanied by a thorough pulling out of the muscles - dig the tips of the fingers in close by the spinous processes and push the muscles out and up.

Continue this treatment until you get heat in the eye - that is to say, you determine so much blood to the eye by that specific treatment in the vaso-motor area that the eye becomes warm - that is an indication that you have flushed the eye with arterial blood but be careful to follow the order of this treatment - do not reverse the order.

There are some people who treat the eye first, and afterwards give general treatment - you will get no results in that case. You must give the general treatment first to get the blood circulation as rapidly as possible and then determine it to the local area, the eye.

Another illustration of this is an another direction - suppressed menstruation. The treatment is the same, only there is different part - uterine instead of the eye. In this case reverse the treatment and effect -

- 1 General circulatory treatment -
- 2 Strong articulation down spine from the occiput to the coccyx -
- 3 articulate at the pelvic region - local treatment -
- 4 Tapping over the symphysis pubes.

Where the muscles of the eye are involved as in strabismus, and these other conditions we mentioned before, the lesions are found in the orbit of the eye or in the cervical region or in the upper dorsal region.

Now, remember that structural lesions are not limited to spinal column (vertebral) lesions - that is where the Osteopath makes a mistake in defining Osteopathic principals - you may find lesions in any structure - muscles, blood, etc. - for example, if the structure of the nerve cell is involved you will not correct that by a bone lesion - you must correct the cell structure lesion.

Strabismus - In the treatment, applying

- 1 Strong stimulation in the upper dorsal - This in all probability reaches the eye through the Sympathetic system.
- 2 Treatment over the eyeball itself, in order to determine locally the effects of the other treatment in connection with the blood and nerve force towards the eye itself -
- 3 Treatment to the optic vaso-motor, principally in the superior cervical ganglion region - continue this treatment through the cervical and upper dorsal region in order to connect the vaso-motor to the eye with the

general vaso-motor system.

When we get dilation of the eye, for example, as in exophthalmic goitre, it is not, as is generally supposed, the erection direct or indirect from the heart, but is simply the cutting off of the connection between the eye and the general vasomotor system. Vaso-motor influences is sympathetic in relation to the eye: it is through the medium of certain cranial nerves (5th and 3d): any involvement of the nuclei of these nerves will give you disturbance. In the eye we have a predominance of dilations one of the cranial nerves are constrictors - they are all dilators. Any constriction comes from the Sympathetic System to these cranial nerves to modify dilation.

The vaso-motor to the pelvis is just the same as to the eyes - it is dilator - and you have no constrictor fibres below the 2d lumbar: the sacral nerves are spoken of as homologues of the white communicantes.

You can modify pain through the solar plexus, because it is the only Sympathetic field through which you can get dilation. Exaggeration of the dilation function is the reason why we get so many disturbances in the pelvic region. Prostatic trouble in the male is similar to congestion of the uterus and ovaries in the female, 95% to 100% have some muscular or soft tissue disturbance of the body - for example, increased soft tissue (tumor) enormously enlarged condition of the muscular system over the sacrum - irritation of the dilator function where you do not have control of it through the Sympathetic System.

Cataract is analogous to the fibroid tumor of the uterus caused by excessive dilation without sympathetic control. There is not space enough in the eye for a fibroid tumor, but have cataract instead.

4 In inflammatory conditions of the eye, the inflammation is a ~~xx~~ result of venous stasis - that is, it is obstructed circulation caused -

a - By pressure on the lymphatics -

b - By excessive use of eye lotions.

The use of lotions causes either dilation of the eye or some portion of the eye, or else the accumulation of poison within the eye, that tends to coagulation of the fluids of the eye.

In the first case

a - The treatment is to stimulate the lymphatic circulation in relation to the eye -

In the second case -

b - We require to stimulate both the drainage from the eye and the arterial blood to the eye, and if poison is present, eliminate that poison either by Osteopathic treatment or otherwise.

These accumulated substances have not only a toxic affect upon the eyes, but also causes exaggerated contraction or dilation periodically. You will find that

Nature's law of sleep applies not only to living animals it applies to all nature. A plant sleeps, if it gets chance to sleep, just the same as an animal, and there is a certain dormancy in those poisons at periods, and at other periods you have poisonous condition - that is the cause of better and worse conditions.

We find in relation to intoxication in the system. The old explanation of urea headaches was that it passed through the circulation and was deposited in the brain to such an extent that it was thrown off by a headache. That is unscientific.

In cases of inflammation there is an inability to establish venous drainage, particularly an account of this period contraction or relaxation of the eye muscles.

In reference to these eye lotions, we have no idea of the extent of the damage they do to the eyes.

In applying the treatment in these cases of eye trouble-

1. Raise and free the clavicle, particularly in relation to the 1st rib - this applies to the method of carrying out these general points we mentioned in strabismus, particularly.

2. Free and keep free the rigid condition of the muscles in the neck by stretching the neck and upper part of the spinal column, relaxing particularly the pressure at the angle of the jaw.

3. Treat around the ears, giving the typical ear treatment; one of the points to emphasize in treatment is that air pressure treatment in connection with the eustachian tube. Use the cup of the hand, placing over both ears at the same time, or exhausting the air; repeat several times to establish pressure. There is some relation between the eyes and the ears; you will find a weak eye, and on the same side an ear condition, no one knows why. Continue this treatment in the temporal region and on the forehead - vibrate, for example, as that is a very good treatment along this line.

Then direct the treatment to the eye itself, determining all movements toward the inner canthus of the eye. There is an old superstitious idea in the folk lore, that if you rub the eye from within out, you will make it blind.

In making circulation movements always determine it around toward the inner canthus of the eye.

4. Manipulative treatment over the supra and infra orbital region, particularly the first, moving the soft tissues of the cheek toward the sides of the nose, then apply pressure toward the upper part of the nose, with the mouth of the patient closed so as to increase the air pressure, and get as much distension as you can

of the nostril. Apply similiar pressure along the side of the nose around the outer eye orbit toward the side of the face and external canthus of the eye, and then downward to the angle of the jaw.

This treatment is over the orbit of the eye and not in the eye itself - applies to the eyeball treated through the eyelid.

If it is necessary to bath the eyes, use salt and water, a solution of about a teaspoonful to a pint of water - in that proportion. In inflammatory conditions of the eye it is sometimes of advantage to use a little piece of bread soaked in milk (the bread is used to take up the milk so that you can apply it to the eye). If it is a soothing treatment you cannot be around to give Osteopathic treatment every half hour or hour. You can often relieve congestion with the bread and milk, put on so lightly that there will be no pressure on the eye.

You do not require to use any of these substances that are used by oculists - atrophine, belladonna, nitrates of silver, etc. If it is necessary to use an antiseptic your best solution is alphonzone.

A new born child should have its eyes washed with alphonzone solution as soon as it is washed and dressed, to prevent infection.

The law in reference to nurses specifies certain solutions they may carry and use where necessary, but in reference to physicians, there is no law. It is left absolutely to the discretion of physicians.

Iowa has decided in the last few weeks that if a physician gives certificate for immunity for small pox it is not necessary that he should certify that the child has been vaccinated.

Minnesota a couple of years ago decided the same point on the same line.

Strictly homopath physicians will use some remedy which is supposed to take the place of vaccination and a certificate to that effect is acceptable.

An Osteopath may vaccinate by Osteopathic treatment.

In the general treatment of the eyes we must remember the close connection or relation of the eyes and the rest of the body. The majority of eye troubles represent reflex symptomatic conditions associated with some other diseases. We get illustrations of this in the field of experimental physiology; for example, in division of the sciatic nerve the eye will practically lose its function - sometimes innominate lesions affect the eye in the same way by pressure which causes diseases analogous to the cutting off of the sciatic nerve; the nerves of the arm can be affected in the same manner; we get this through the Sympathetic system. Where the sciatic nerve is involved the influence passes up from the sacral region along the sympathetic chain

Another point we require to note particularly is that the eye is dependent for its sensory stimulation on the muscles of sense as well as on the light hence any involvement of the muscular sense is liable to react on the eyes.

Nutritive disturbances in any part of the body, whether these represent toxic conditions or imperfect nutrient substances, will react on the eyes through the sympathetic system - hence in the treatment of the eye diseases the body must be kept in a condition of nutrition as nearly perfect as possible. There are some people that claim that all diseases can be diagnosed from the eye - that is carrying the truth into the field of faddism. Sometimes they claim that if you give them a hair taken from your head they will tell you what is the matter with you. The pigmented composition and constitution of the hair is a pretty good index of the body - the same is true of the eyes.

In inflammatory diseases of the eye hot water is sometimes of great service; the action when first applied is that of pupil dilation; the secondary action, is control or to get control of the blood circulation to and from the eye; the best effects are gained by applying the hot water in soft muslin or some kind of soft material like that, wrung out of the hot water. Apply directly over the eye, repeating the process just as you would apply hot fermentations, keeping it up for fifteen or twenty minutes.

That method of application of hot water is much better than those little eye water bags for using heat, for you will want the moisture as well as the heat, particularly to the eye; the hot water bottle is not very good anyway, on account of the weight.

In some cases dry heat is better than moist heat, especially if you want to dilate the arterial blood vessels and cause more blood to flow to the local parts.

Now, this applies to pains in the eye, for example, neuralgic pains, it also applies to neuralgia itself. You get the best effect by applying dry heat. Take a piece of flannel, for example, make it very hot, then apply directly, or use heated bran or salt, but the salt is rather heavy for the eye.

In Germany, for rheumatic, they heat sand and apply directly to the part affected. In Berlin, they heat sand in a hoghead, and put a man right into it; the sand is very light and fine, almost like dust. They claim to get very much better results in that way; they put the body in a heat up to two or three hundred degrees.

Ice or ice cold water may be used in inflammatory conditions if there is any tendency to abscess formation,

to avoid the abscess or to prevent the spread of the inflammation. The best way to apply ice is to crush it, then make an ice poultice and apply it just the same as a bran poultice or any other kind of a poultice. One point about the use of the ice is the frequent change of the ice; the heat of the eye will cause warmth, then turn the cold side etc.

In dealing with aggravated cases of congestion that amounts to a static condition of the blood, is best to use alternately heat and cold.

In some ophthalmic institutions they have a sort of face apparatus by which they keep up the cold atmosphere right around the eye. I do not think that this is a good plan, because the eye is so sensitive that I do not think it a good method of applying cold to the eye.

E - Inflammation of the Eyes.

Here we consider the eye proper, and the inflammation may be either acute or chronic.

In the acute form the inflammation of the eyelid is called "stye" Here the inflammation is localized and limited to one minute point. In nearly all cases of stye there is a purulent condition; that is a latent abscess. Some claim that a stye is a localized pyemic condition.

It always occurs close to the margin of the lid, and most always is centered in a hair follicle. There are exceptions to the fact that it is associated with the margin of the lid. I have seen several cases in which it is either outside or inside; it generally occurs on the under lid, but not always.

It usually goes through a period of incubation extending over two or three or four days, and is very commonly recurrent, or as a reflex from some intestinal condition, and very commonly in cases where the constitution is run down. In the chronic form called Elephanitis there is chronic inflammation of the entire margin of the lid, always associated with a previous conjunctivitis. This Elephanitis appears in two forms;

1 - Squamous form - the margin of the lid being reddened, covered over with scales and following this there is a tendency to recurrence of the inflammation. That is probably due to infection; the scale drops off and irritates, setting up new inflammation.

2 - Ulcerative form - the eyelashes become matted together in connection with a moist scaly inflammatory matter here the roots of the eyelashes are also involved in some cases the roots are destroyed, and the lashes fall out and the margins of the lids become chronically thickened.

This condition occurs most commonly in children in connection with teething as a sequel to scrofula.

In intestinal troubles, in parasitic infection of the eye, there is marked redness of the eye, local irritation with pain, local temperature: it generally comes on with a feeling as if there was sand in the eye, then the feeling of abnormal heat, then pricking and darting pains - the changes in the substance of the tissues around the margins of the lids causing changes of the blood vessels sometimes ~~xx~~ amounting to rupture, exudation, disintegration of the leucocytes and a chronic abscess condition. That may be kept up for a long time particularly in those cases where you have constitutional conditions in weak children, scrofulous, etc.

Conjunctivitis - here we have an inflammation in the conjunctival membrane; there are different types -
 1 Catarrhal type - found either in acute or chronic form. It is due to local irritation, constitutional derangements or excessive eye strain, and the eyelid first becomes hyperemic and then it is swollen with a great deal of redness in the eye, gradually increasing until the redness reaches the eyeball, without extending to the cornea. If there is much swelling and redness of the conjunctiva the eyeball becomes involved secondarily: generally there is some discharge with a smarting and burning pain.

In the chronic form there is a thickening of the epithelial layer with a continued smarting, and pressure on the eyeball. That is thickened conjunctival membrane that causes pressure on the eyeball.

2 Granular type - this begins almost the same time as catarrhal type, but it runs its course more rapidly. The pain is most intense, there is photophobia, and also a pus discharge such as we do not find in the catarrhal type: then there is the formation of small granules, chiefly on the upper lid. In some cases the irritation passes from the conjunctiva to the cornea, the result being to cause the cornea to lose its power of refraction, and consequently there is the loss of vision in the individual.

3 Phlyctenular - here the inflammation of the conjunctiva is accompanied by the formation of small blebs or blisters under the epithelium: these blisters contain serum, pus and lymph. The blood vessels of the conjunctiva become infected, and the conjunctiva itself becomes thickened and exceedingly irritable.

4 Croupous type - here we have purulent conjunctivitis, part of the exudate continuing slightly adherent to the conjunctival surface.

5 Diphtheritic type - this differs from No. 4 (croupous type) in the fact that the exudate becomes very adhesive, forming artificial diphtheritic membrane, in severe cases destroying the cornea, resulting in the loss of vision.

6 Gonorrhoeal type - caused by the toxin of gonorrhoea or direct infection - for example, rubbing the eyes. In some cases we find a conjunctivitis developed in the new born child, either syphilitic or gonorrhoeal infection taking place at the time of birth.

7 Pterygium a chronic thickening of the conjunctiva, beginning at the internal canthi and extending out over the eyeball, resulting in hypertrophy. It is generally due to traumatism, exposure or some form of infection. It gradually develops in the form of a film covering over the cornea and preventing vision.

Treatment of these eye conditions.

The basis of treatment that is applied in general by oculists is that of counter-irritation or absorption, the object being to balance up for example, the muscular system, or to counter-balance one blood condition by another blood condition. Sometimes this principle is used Osteopathically in order to stimulate a particular area by producing an increased amount of blood, especially around the area of a chronic inflammation. Inflammation consists of hyperemia, congestion, and later, exudation. Behind these, however, there lies an inaction due to some reflex from some other part of the system - for example, spinal muscular contractions, intestinal contractions some organic disturbance, for example, the stomach, intestines, uterus, etc.

In order that the eye may be normal, the eye must have its nerve supply and blood supply normal: under or over supply of either or both generally produces an inflammation.

The supply of blood ultimately depends on the functional activity of the nervous system, particularly the vasomotor system. It is on this principle that the counter action is applied, especially the stimulating of the cilio-spinal region, situated in the lower cervical and upper dorsal region. The treatment of the Sympathetic system anywhere in the body may have a similar effect, particularly if the eye condition involves any of these nerves. The 2-3-4-5-6- are more immediately concerned. The stimulation of the 3rd cranial nerve not only affects the eye and its appendages, but also the cortex of the brain. For this reason in eye trouble associated with brain lesions, one of the most important lines of treatment is through the 3rd cranial nerve. This explains in

ptosis one of the earliest symptoms associated with cortical cell degeneration: this is due to the fact that the third cranial nerve is very closely related to most of the nervepaths in the brain that have any connection with the eye. There is a sensory coordination at the base of the brain and one at the corpora-quadrigemina and optic thalamus, and one in the cortex of the brain itself; this makes the 3rd nerve the true cerebro spinal eye nerve. Sympathetic conditions all over the body establish their connections through this nerve.

In the fifth cranial nerve we find a nerve that is largely sympathetic in relation to the eye; therefore it is closely connected with the sympathetic ganglia, and the stimulation of any of its branches causes an impulse to pass along the nerve path to the central parts of the eyeball. This makes the fifth cranial nerve the great sympathetic nerve in connection with eye diseases. This is the nerve that is involved particularly in inflammatory processes. In experimental physiology we find this in connection with the division of the nerve, also in connection with poisonous conditions, as in pillargric poisonous conditions, that affects the eye through the 5th cranial - inflammation and enlarged tissue conditions of the nerve itself.

An inflammation, we must remember, is a physiological and not a pathological condition; by this we mean that it is an attempt on the part of Nature to balance up some inequality in the blood circulation due to a pressure, obstruction or toxic condition. Inflammation may go into a later stage of degeneration, where we get a pathological condition. In inflammation we still have vital control. In degeneration this is lost and we have chemical and physical action. Treat inflammation back to the cause, and correct the unbalance of the circulation.

The same principle you apply to hemorrhage of the eye. The oculist will use atropine or electricity, and some substance to remove it. That is not necessary it is really nonsensical method of dealing with the eye. If you do produce an absorption you will have a scar that will last a patient's lifetime; you can produce resorption without producing a scar.

Most of the inflammatory conditions of the eye are due to some reflex irritation from some other organ, for example, intestinal toxemia, the irritating impulses passing from the viscera along the sympathetic system to the eye where it unbalances the vasomotor system. This result is a diseased condition of the eye. If the irritation is kept up the general oculist will admit there is a vasomotor disease, but this is not so; the disease is related to the eye, or is a specific local condition, but not a spinal disease. The difficult

cases are chronic conditions where we have a secondary lesion in the spinal area .

Inflamations originating from the viscera may pass through the spine. In this case we find the spinal lesions in the form of contracted muscles or lesions of the spinal vertebrae; generally, however, the spinal lesion is secondary to an intestinal impaction or catarrhal condition or uterine disease of some type. In this case the eye trouble must be treated by correcting the disturbance in the other organs, and also correct the spinal conditions.

This is one reason why many of the cases treated by the oculist fail to benefit; the local treatment of the eye is an aggravation rather than a palliation; the eye trouble is nearly always secondary to some other condition. All the local treatment that could be given will not remove the cause; you must get back to the original cause of the trouble.

In giving local treatment to the eye we ought to remember that it is given -

- (1) as a palliative treatment, or
- (2) in connection with some other treatment, or
- (3) the treatment of some other condition.

To determine the more general treatment toward the eyes treat the spine from below up, in order to localize the nerve and blood supply toward the eyes.

For palliative or reparative purposes -

1 - Close the lid and grasp the eyeball between the finger and the thumb, and move the eye gently from side to side.

2 Place the cushion of the finger over the eyeball and vibrate by using a finger on top of the one on the eyeball. Vibration may be applied in two ways -

a By gently tapping the eye with the tip of the finger; use this in case of film or cataract, or in rigidity of the eye.

b Vibrate with one finger over the other, gradually and gently increasing the pressure as you increase the rate of vibration. This is particularly applicable in muscle conditions of the eye, as in astigmatism. (The rays of light do not converge to a point on the retina.)

3 In treating the surrounding structure the principal point to aim at is to establish circulation, chiefly drainage circulation through the lymph circulation from the eye orbit. Remember we can get the lymph system at the outer canthus and a little below the lower of the eye.

4 Where the eye is irritated by the light it may be avoided by using an ordinary shade or a pair of dark glasses, or use the finger of S bandage. Place a soft pad of cotton over the eye. If you want to exclude

the light entirely use the cotton; there must not be any pressure on the eye. In the average case do not entirely exclude the light. The only thing I know of analogous to the dark room treatment is the Spanish Inquisition.

The light of the eye is its own inherent light, and if the eye does not absorb the light you will not correct the conditions of the eye. In intense cases only should the eye be darkened.

5 In cleansing the eye in the average case that is free from infection, all that is necessary is to use distilled water. Where there is infection or any danger of infection the best thing to use is Alphonsons. Boracic acid is not strong enough, and distilled water is just as good in all cases where a stronger remedy is not indicated. In applying use a medicine dropper; that is the only way to put anything in the eye, by drop by drop.

6 In treating the eye we must remember that some conditions are congenital for example, too long or too short a plane of the eyeball; the absence or imperfect presence of the crystalline lens. These are the two conditions that we find representing a congenital structural condition. In these cases all that can be done is to supply an artificial lens, or to correct the vision by correcting the axis so as to keep the eye as near as possible in physical integrity. If there is the loss of refraction the only remedy is to supply the refraction by glasses. Where it represents the structural condition, I mean. The advantage of using glasses, even in cases where the structural defects are not congenital, is that it corrects for the time being the curvatures, also rectifying the focal points of the eye until those can be corrected by treatment. The principal value of glasses in these cases is that there is an artificial preservation of the equilibrium in the different parts of the structure of the eye; in those cases, however, we must distinguish between the curable and the incurable - if the case is not congenital it is curable. General treatment should be given to establish perfect circulation, and muscle action through the nerve supply. The general treatment in these cases should always include the following points

1 Thorough treatment of the 5th cranial nerve. You remember we found that represented the circulation of the Sympathetic side of the eye, or the visceral function of the eye. This is much more important than we generally suppose. There is a peristaltic rhythm in the eye which is dependent for its control on the 5th cranial nerve through the sympathetic function.

2 With patient on the back, place one hand under the chin, the other at the back of the head - give rotation and extension of the head and neck - keep up extension while rotating in all directions.

3 Place one hand on top of the head of the patient and the other beneath the head and neck, with two fingers on either side of the spine, extending down to the 5th dorsal, and with the tips of the fingers move the muscles upward while you rotate the head from side to side, gradually working up to the occipital region.

4 Stand at the head of the patient, place your hand on the side of the neck and the long est fingers just behind the transverse processes of the upper cervical vertebrae. Give first gentle extension, then rotate the head to one side, while the hand on the other side manipulates the muscles in a similar way.

5 Manipulate thoroughly the muscles in the anterior part of the neck, while doing this throw the head slightly backward by pressure applied at the chin and pull the muscles upward.

6 In the defects of refraction, the cataract, the result of traumatism or exposure, which causes a tissue contraction. In this case manipulate the eyeball over the eyelid between the thumb and finger, and give general stimulation to the orbital region. In cases of congenital shortening all that can be done is to furnish glasses to the patient: if the condition is required glasses may be used as a palliative, but the condition is to be treated from the standpoint of paralysis or paresis of the ciliary muscles, or as a case of intra-orbital disease, or as a constitutional disturbance, reacting on the eyes. In this case special attention must be given to the condition of the Sympathetic system - for example, stimulation of the upper cervical and upper dorsal region, and along with this the stimulation of the eyeball.

In astigmatism the stimulation of the 3rd cranial nerve as it follows the levator muscles is also called for: also the stimulation of the upper cervical region, looking for contracted, atrophied or displaced conditions of the cervical muscles.

In presbyopia, general stimulation of the eye through the cervical and dorsal region will generally check the development of whatever lesions may be found to follow after.

I- Diseases of the eyes themselves.

The first condition we have to discuss is the condition of the optic nerve and of its terminal apparatus in the retina. In order to differentiate diseases of the optic nerve and retina the ophthalmoscope must be used in order to find out whether there is a degenerative change, whether there is the presence or absence of reaction to the minute rays of light. The diagnosis of optic nerve conditions can be made practically only by the method of exclusion (take up all possible conditions that may be symptomatic or supposed to be symptomatic, and when you have excluded these you have only one left). It is not a very

satisfactory method, but in this case it is the only method we have.

The patient complains of loss of vision. This is a general point. The examination must be made to determine whether this loss of vision is due to cataract or not. The history must be investigated - for example in some cases there is a history of Bright's disease. This will indicate at least a tendency to retinal degeneration. In other cases we will find a history of syphilis or lead poisoning: in this case we find the plastic inflammation of the optic nerve resulting in optic neuritis: later on, optic atrophy.

Retinitis - is most commonly associated with syphilis diabetes, leukemia, purpura, lead poisoning and severe condition of anemia. The ophthalmoscopic examination will indicate the presence of white spots or patches on the retina: these represent degeneration. In some cases we find hemorrhage: if the hemorrhage is recent it will be represented by a bright red color: if it is old it will be represented by a black color - these colors will be seen by the use of the ophthalmoscope.

In chronic renal disease - for example in granular kidney and in the condition of what is called lardaceous kidney, in albumenuria, there will be found a degenerative process, the degenerative hemorrhage condition representing an inflammatory condition of neuritis, or later, white spots of actual degeneration. In slight cases there is an extravasation of blood, with general retinal inflammation, and the inflammation of the optic nerves indicated by pain the pain following the path of the optic nerve.

Functional blindness - is found in hysteria or uremia: in this case the ophthalmoscope indicates nothing abnormal.

In optic neuritis - we find the swollen disk, hyperemic blurring of the edges of the pupil of the eye and a haziness over the face of the disk: sometimes this haziness spreads out over the entire retina.

Where there is great swelling optic atrophy usually follows. In the early stages the vision is simply disturbed: as inflammation becomes intense the sight will become interfered with.

In optic atrophy - we find a condition that generally follows diabetes, lead poisoning, alcohol poisoning and spinal cord diseases. For example, we find in the locomotor ataxia.

We find what is sometimes called secondary atrophy following pupillitis, or the continued strain of the eye, intensified pressure. In this last case the disk becomes pale, either bluish or grayish in color, and there is no pain. The discoloration continues until the entire field of the retina is covered over with this particular color - in other words, we have an anemia and the anemia is gradually exaggerated in a non-nutrition that results

in atrophy.

2- Diseases of the lens.

The principle condition we have to discuss is cataract which represents the capacity of the lens or the capacity of the capsula. Now there are two points that require to be very carefully distinguished. Oculists frequently combine the two conditions, and make no distinction, but there is a distinction, as they find out surgically when they operate to remove the lens and find that it does no good.

The cause of these conditions is lack of nutrition followed by degeneration involving the lens and its capsule or its capsule.

The result is the accumulation of substance which renders the lens opaque and unable to ~~transmit~~ transmit rays of light, that is, unable to discharge one of its functions as a refracting medium of the eye.

Among the causes leading up to this we find stagnation of the blood circulation: this produces a gradual hardening of the lens: the most common condition that causes this is traumatism - deficient distribution to eyes of the blood in common with the head, found principally in senility when gravity tends to keep the blood downward in the body and when we find imperfect peristaltic action of the blood vessels walls.

Among other conditions are lesions involving the upper cervical or upper dorsal region, limiting the distribution of the blood to the eye. the pupil of the eye, instead of being normally dark in color becomes grayish or whitish, the vision gradually impaired without any pain.

Now, there may be cases in which there is pain, but if there is pain present in the development of the cataract proper it is associated with something else.

Among the other causes of cataract we find diabetes, anemic conditions of the head circulation in some of the constitutional diseases, an after effect of chronic chorooiditis, iritis, perforating corneal ulcer.

The senile cataract is due to two conditions generally

- 1- Decreased circulation and
- 2 2- The increased anemic condition of the quality of the blood.

There are two types of cataract - hard and soft. The hard type is usually found in older people. The soft type is generally found in children where you have what is sometimes called the hereditary type of cataract: also found in cases where the development of the cataract is rapid. In diabetes and constitutional types of cataract you have both the soft and hard types. Surgeons, for example, will take diabetic cataract, and watch it grow until it is ripe - has reached

the hardstage: from our standpoint it is ripe while soft for excision.

3 Disease of iris.

The movement of the eyes are regulated by the blood supply, and by a distinctive nervous system quite independent of the general vasomotor system; the iris dilators are entirely separate from the vasomotor nerves.

These dilators are found -

- a above the level of the superior cervical ganglion they are not fibres that pass through the cervical ganglia as the dilators that we find further down the spine -
- b they are also found at the level of the ciliary nerves, two sets of fibres passing into the cranium through the carotid canal, one of these sets dilating the pupil of the eye on direct stimulation without affecting the blood vessel system; these fibres are sometimes called iris or irido-dilators.

In testing the nerves that pass from the ophthalmic branches, we also find two sets of fibres, the majority constrictors with a few dilators. The stimulation of the sympathetic nerve chain will also produce dilation of the pupil without and before muscular contraction the meaning of that of course, is, this dilation does not take place in or through the muscular system, it is entirely separated from the muscular phenomena of the eye. In this case the dilation lasts only a short time and is followed by a permanent contraction, of course that means more or less permanent.

Now that is one of the phenomena which certain writers have taken as a supposed demonstration of the fact that dilation is inhibition of constriction; it is what physiology calls the immediate effect of stimulation and the permanent after effect of stimulation on the nervous side. The temporary effect of stimulation is irritation; this gives dilatation as soon as the irritation is over; then we get the real effect of stimulation, which is constriction. Dilation of the pupil has nothing to do with the vasomotor side.

Physiology has demonstrated that the division of the 4-5-6 dorsal rami communicantes on the sympathetic side (that is the gray communicantes; causes a slight momentary dilatation of the pupil; the same result is obtained by dividing the 1-2 rami communicantes or by dividing the branches from 5-6-7-8 cervical nerves; that is to say, the nerve fibres down to the level of the 1st dorsal ganglion. This means that the first dorsal ganglion of the sympathetic receives dilator fibres from the spinal cord in the ascending as well as the descending direction from this ganglion they pass upward through the anterior branch of the annulus of Vieussens (relating to the subclavian artery) to

the cervical ganglia, double branching from below of Depressor nerve and the 10th nerve branches from above branches from 1st dorsal ganglion passing up to the eye; we also get dilator fibres there to the head and ear.

The first dorsal ganglion of the sympathetic acts as the center for the dilator nerves and their impulses to the pupil of the eye, the dilator fibres passing upward.

a - through the sympathetic chain

b - in connection with the trunk of the pneumogastric nerve, reaching the iris through the Gasserian ganglion and the small branching fibres of the ophthalmic division of the trigeminal.

Stomach trouble in relation to the eye - heart trouble in relation to the eye, is not to be treated specifically that is to be left to the specific treatment of the eye, that the eye may react on the stomach. In you concentrate the force of the treatment on the stomach in an eye case, you will perhaps correct the stomach condition and not the eye trouble.

Dilator fibres are also found in the fifth cranial nerve before it reaches the ciliary ganglion, but physiology has demonstrated that by dividing these fibres the reflex dilatation of the pupil is not interfered with as long as the integrity of the sympathetic fibres remain intact - now that means that here in the 5th cranial nerve we have dilator fibres which may be called emergency fibres - they are fibres which may have the dilator function when the sympathetic system goes out of function for some reason just as the Depressor nerve in relation to the heart has function in relation to the 10th, but acts only in emergency.

Division of the 5th nerve itself causes the pupil to contract, and the stimulation of the peripheral end does not cause the pupil to dilate, because of the complete integrity and continued action of the sympathetic nerves and the motor oculi nerve.

Now that is an entire demonstration of the fact that the nerve is an emergency nerve in relation to the eye, and that the important point bearing on the condition. The emergency nerve is one that represents the open pathway, and the open pathway is the pathway subject to irritation - you may cut the nerve or cut out a piece of the nerve and remove the ganglion to take away the double pain, and the same of neuralgia we have in relation because you still have left accessory nerves.

The complete dilatation of the eye can be produced by stimulating a single fibre of the ciliary nerves; this means that these ciliary fibres that develop constantly acting dilator fibres. The ciliary ganglion is very accessible to Osteopathy and see we can get a

permanent effect on the nerves that control the dilator function, and that explains why we can deal with both congestive and anemic conditions of the eye from that standpoint, and we know that this dilation does not take place in connection with the blood, but from the eye itself.

The blood in the eye is really reduced to a minimum in circulation; that is one reason why congested conditions of the eye are so frequent; the slightest disturbance of the circulation of the eye will cause congestion. The circulation, not blood, lymph is at its maximum and blood at its minimum. Drainage of the lymph lessens the intra ocular pressure.

Constrictor fibres.

These constrictor fibres are found in the trunk of the 3rd cranial nerve, passing through the ciliary ganglion and branching out to the eye in connection with ciliary nerves. The division of these nerves causes a much more marked effect than the division of the oculi motor nerve; on account of the tonic action of the ciliary ganglion; the whole of the iris may be affected by the irritation of a single ciliary nerve, probably because of the action of the peripheral nerve fibres from the ciliary ganglion as a center. The ciliary fibres and the sympathetic fibres act in opposition to one another; hence the simultaneous stimulation of the sympathetic and the ciliary ganglia will cause dilatation; that is to say, the ciliary ganglion function will be overcome, and we will get dilatation instead of constriction.

Iritis

Here we have an inflammation of the iris caused directly by traumatism, or indirectly by the toxins of syphilis, gonorrhoea, diabetes, gout, rheumatism and tuberculosis; also secondary to lesions in the upper dorsal and cervical region.

Iritis gives severe pain as one of its marked symptoms, found principally along the side of the nose, or in the lower part of the forehead just above the eyes; also commonly paroxysmal neuralgic pain shooting through the eyes. As the iritis develops the pain increases, the eye becomes more sensitive to light; later when the pupil is injected the eye responds very slowly to light. In many cases the blood vessels closest to the pupillary margins become engorged; if this passes into the chronic condition you have almost varicose blood vessel conditions. In some cases you will find little yellowish patches around the margin of the pupil of the eye. The inflammation may extend to the ciliary bodies; in this case we have a sympathetic complications, usually marking a chronic condition of the iris.

Choroditis. represents an inflammation of the choroid; here we have as symptoms a very intense aching pain; along with this flashes of light or color before the eyes on opening the eyelids; black or dark colored spots are seen when the eye is looking at an object. The blood vessels are injected, producing a dull redness of the eyeball. The most marked symptom is the change of the choroids shown by the ophthalmoscope only.

Among the causes we find traumatism, toxins of contagious or infectious diseases, particularly and syphilitic toxin. This is why choroditis is always spoken of as an incurable disease because back of it is a syphilitic condition. From our standpoint syphilis is a curable condition; provided you have no degenerative condition. Syphilis is more easily controlled and kept under control than gonorrhoea; gonorrhoeal toxin is much more virulent.

G Diseases of the Cornea and Sclerotic.

These diseases have not been investigated to any great extent until very recent times. The cornea and the Sclerotic are immediately associated with the trigeminal nerve. Some writers claim that when the sclerotic and cornea are involved there is always a degeneration, and for that reason the condition is supposed to be largely an incurable condition if it exists. After the division of the trigeminal nerve physiology says there is complete degeneration of the cervical plexuses; associated with this degeneration there is the preservation of the nerve sheaths. In other words there is destruction of the nerve tissues of Schwann, or any of the associated substances connected with the nerves or plexuses; accompanying the inflammatory process there is an exudation into the anterior portion of the eye, affecting chiefly the superficial layers of the cornea. Neither iritis nor choroditis have any connection with the corneal or sclerotic conditions; that is, with the inflammatory conditions or the degenerative changes which follow.

There is a connection, however, between the corneal and sclerotic inflammation and the retina, because the internal layer of the retina becomes edematous. The edema is located between the terminals of the optic nerve. The condition we find here is a hypertrophic degeneration of the granular substance lying around the terminals of the optic nerve. Now that is probably simply malnutrition - the granular substance in all probability represents the receptacle for the nutrition to be passed into those nerve filaments in connections with some absorption process.

Corneal ulcer - represents the condition produced by the loss of part of the corneal epithelium. This in turn is caused by traumatic condition or is secondary to conjunctivitis, disease or injuries involving the 5th cranial nerve, reflex irritation from the pelvis,

or abdominal organs, and the impairment of the nutritive condition of the blood in such diseases as malaria, and in scrofulous conditions of the system.

Symptoms - among the symptoms we find excessive lachrymation due to photophobia.. In some cases the cornea remains quite clear; other cases there is an infiltration taking place in the tissues contiguous to the ulcer, resulting in the loss of the transparency of the eye.

Phlyctenular conditions of the cornea - Here we have a condition in which small cysts are found over the surface of the cornea, the wall of the cyst consisting of corneal epithelium, which is very much distended as the cystic accumulation of fluid takes place. In some cases the cyst will spontaneously break after it has been developed a number of days; this occurs unless something has been done to prevent it. In corneal ulcer absorption will result in typical corneal ulcer.

Corneal herpes - this is a condition in which vesicles form on the cornea, and if these vesicles are spontaneously ruptured there is left behind a transparent surface corresponding with the point of the herpes. An other type of ulcer is associated with the deep layers, with pus formation and accumulations in the anterior portion. The great danger that we find here is the danger of the perforation of the cornea, and if the perforation takes place it develops into iritis. This is liable to become interstitial; this is a chronic inflammation of the deep corneal substance. In this case the cornea appears not to be transparent, but more like the aspect of a piece of ground glass (rough hazy surface).

We also find pericorneal hyperemia with extensive lachrymation - secondary, for example, to syphilis. The immediate cause of this condition is mal-nutrition, and the direct cause of the mal nutrition, is the obstruction of the Schlemm's canal; this canal lies at the point of junction between the cornea and the sclerotic, and its function is to carry off the lymph from between the corneal plates through the spaces. These spaces are called "Fontana spaces" emptying the fluid into the veins at the anterior portion of the sclerotic. When the lymph is obstructed in Schlemm's canal the lymph is retained in the corneal layers; this retention sets up an inflammation; causing stagnation of the blood in the veins of the pericorneal structure and secondary iritis. Retained lymph presses between the corneal layers, and this causes an edematous condition - or in some cases an

infiltration of the epithelial cells.

Pannus - Corneal vascularization and opacity. Here we have a condition that represents a hyperemia followed by stagnation of the blood, and the subsequent opacity in connection with the cornea. The primary cause, from the standpoint of cause in connection with this type of condition is a chronic conjunctivitis. It involves that portion of the cornea which in movements of the eye is brought into more or less close contact with the inflamed conjunctiva (movement of the eye causes infection).

Glaucoma -

represents a very dense opacity of the cornea the eye being covered over with an entire layer of white substance resulting from hyperemia - stagnation of the fluid and a type of organization.

Staphyloema - distinguished from glaucoma, represents a condition of the cornea resulting from corneal inflammation or corneal ulceration, in which the cornea-

a - is weakened -

b - yields to pressure from the inner portion of the eye - and

c - as a result stands out in bulging form, and the corneal layers become so weak they are no longer in a tonic condition: following that you have

the pressure from within, and the result is that you have the bulging out of the cornea.

Scleritis - Here we have an inflammation of the sclerotic with patches of hyperemia, found all over the sclerotic. It is caused by constitutional disturbance, found principally for example, secondary to rheumatism. After hyperemia there follows a congestion involving the sinuses of the sclerotic.

Episcleritis - Here we have an inflammation of the sclerotic followed by infiltration: when the infiltration is established the increase of substance found in the infiltration causes a sero-fibrinous exudation into the outer layer of the sclerotic, and also into the upper layer of the conjunctiva. In some cases this exudate forms a soft mucilage, and adhesions either partial or complete take place. You will find this for example, sometimes where the eye closes up over night, and you have to take some means (hot water, for example) to separate the adhesions that holds the lids together.

Trachoma - here we have a form of conjunctivitis in which we find a hard pustular excrescences located in the inner surface of the eyelids, accompanied by some what marked conjunctivitis. The inner margin of the conjunctiva becomes elevated, and the result being that it projects outward, with rough, irregular points, resulting in chronic inflammation, and in this chronic con-

dition there is a resultant opacity of the cornea causing blindness.

Treatment - General

The main point in the treatment of the eye is to establish, or try to establish physiological conditions, that is we aim at the establishment of the normal blood and nerve conditions. In doing this the points are -

1 - General treatment of the neck and the consequent thorough relaxation of the muscles. Eye troubles are synonymous from the structural standpoint with muscular or osseous conditions of the neck. The center for eye trouble is at the first dorsal ganglion.

2 - Constitutional treatment to prevent the development of all irritating conditions such as toxin formation: irritating reflex action from other parts of the body: in some cases you will find a condition like suppressed condition and that will relieve the eye trouble.

3 - thorough treatment of the superior cervical ganglion in connection with the treatment of the 5th cranial nerve at all parts where it is accessible for treatment.

4 - in some cases the most irritating structural condition that we find is some lack of adjustment in the 1st dorsal ganglion: and reacts very materially on the eye: in this case we have two types of effects.

a - in which the vertebral blood is involved.

b - in which the nervous system is involved. Now you will remember from that center we have both Sympathetic and Central nervous systems involved.

5 - The treatment of the eye itself, for the purpose of stimulating the venous blood supply and the lymph away from and out of the eyeball or eye muscles or lids.

These are five ~~af~~ points that apply in general to all the diseases mentioned in connection with the eye.

Treatment of special types.

1 - These conditions that involve muscles of the eye. If it is due to syphilis or rheumatism the organism must be treated from the standpoint of these conditions later, treatment must be directed to the eye itself and the general condition of the metabolism and assimilation in the body so as to prevent the formation of end products that may affect the nutritive condition of the eyes. Attend particularly to displacements in the cervical vertebrae, not only correcting these but keeping up the articulation after the correction. Many cases of eye trouble fail to be cured Osteopathically because that is not done: they must correct lesions in other parts of the body and let Nature attend to the rest of it in the strong organs, but the eye is so

delicately constructed and has such a peculiarly complicated arrangement that the correction of the lesion is only one step.

In addition to this stretch the muscles and soft tissues of the eye, and make the patient use the eye.

You must keep up the articulation in order to affect a cure later on. To do this, stretch the muscles of the eye; this is done by holding the eyeball in fixation, and with the fingers and thumb of the other hand move the eyeball of the other eye in all directions. This type of treatment is almost entirely lost sight of in Osteopathic treatments in reference to the eye; where we have dual organs we must use the duality to get at the weaker organs, and the Sympathetic relation between the motion of the other eye gives you a stronger hold on the weak eye if you hold the strong eye in tension and then attempt to move the unscand eye in all directions.

In strabismus - stimulate the muscles of the eye itself as in cases of paralysis; in addition to this stretch the muscles and soft tissue of the eye, and make the patient use the eye; if necessary use some optical means of changing the focal center of the eye. The old method of doing this was to have a frame that just covered the eye, with little round holes at different points outward - make the eye look toward different focal points, and change its position to accommodate itself to the light that comes in at the different points.

Another method is to use a prism glass; the object there is to strengthen the muscle's action.

Then treat the lesions that are found in the cervical region. In strabismus look particularly for antagonistic muscle lesions; that is, intensely contracted at one point; and just the same in the opposite direction - at another point intensely relaxed.

You will find that applicable to other organs - in excretory diseases in the kidney proper - in floating kidney you will find contracted and relaxed muscles on opposite sides in the spine in renal area, or intense contraction in the ribs one side and relaxed condition on the other side. When the kidney is normal there is no tenderness in the spine, but if it is out of its place the spine becomes exceedingly sensitive, and the floating ribs on the other side are almost dislocated.

That point applies particularly to the dual organs - eyes, lungs, kidneys and such organs as these - antagonistic relaxation or contraction, either in the muscular system or in the articulation - for example - the heads of ribs; also found in gout in connection with the lower extremities, e.g. feet. Inability to walk in gout is not from pain, but it is from this same antagonistic con-

traction and relaxation: the pain may represent a certain element in causing that condition, but that is not the cause: it is not painful to put down the foot or move the toes, but it is lack of adaptation of the muscles

I have not the least idea but that is the same thing we find in rheumatism and many of the cases we call paresis of the arm: inability to move the arm. The Osteopathic treatment we give for that coordinates the muscle action, and that is what we need: that is what we find principally in connection with these conditions of the eye: in strabismus, astigmatism, and a great many of the other conditions in which the eye is involved.

Another point in the treatment of strabismus is the treatment of soft tissues in the orbit of the eye - that is, round about in the orbit, not the eyeball itself. There are some cases in which this condition is associated with abnormal fat in the orbit of the eye: absorptive treatment must be given before that can be relieved. - that is before you can relieve the tension of the eye proper.

Direct pressure is made by the cushion of the finger over the eyeball, pressing lightly the eyeball directly back into the orbit until you get an elastic reaction. This gives you a double effect on the soft tissues of the orbit, and the stimulating effect on the ciliary ganglion: the net result is to relieve pressure or impingement of the nerve and blood vessels and the soft tissue structures, to tone up the muscles and the soft tissues in general, and to equalize intravascular pressure.

You get your best results here by treating the two eyes simultaneously, just the same as you would to one side, in this case you treat both sides in the same direction.

Another treatment in these muscles conditions is vibration and light tapping over the eye, either separately or in combination. This is applied by placing the cushion of the finger over the closed eye and then with the finger or fingers of the other hand lightly tap over the finger or fingers laid over the eye.

This is one of the best forms of treatment that we have done for toning the eyes, or for concentrating coordinating muscle action: that is to say, where you have the muscle of the eye tending to pull in opposite directions, - concentrating the activity of the muscle action and coordination in giving this treatment. Also a means of stimulating the retinal terminals of the optic nerve. The inherent light of the eye is aroused: the light tapping will use up the inherent light of the eye, and it will make it absorb more light when it is exposed to the light.

If your eyes are tired when reading close your eyes and give that treatment yourself: it rests the

eye and makes it more willing to absorb light, which is essential to the eye.

Another point in the treatment of the muscle condition of the eye is to apply pressure. Place the cushion part of the fingers deeply at the inner and outer canthus of the eye, the cushion of the finger placed over the eyeball, and then apply pressure or tapping from the inner to the outer canthus, or from the outer to the inner - that will give you practically the only method we have to relieve adhesions. There are many cases of muscular eye trouble where the cause is adhesions: the muscle is not operating because somewhere between its origin and insertion you have the muscle adhering to another muscle or other structure of the eye. This method is the best to relieve.

Where the eye is flattened out horizontally (the normal human eye is more circular than the average animal eye), take the eye between the inner and the outer canthus, and tap on one side and then on the other. Give light treatment for any functional squinting of the eye - for example, in the spasmodic condition of epilepsy.

Lachrymal apparatus -

- 1 - In the treatment of lachrymal conditions of the eye you will depend almost entirely on the lymph system - lymph drainage by strong pressure in the notch that lies at the outside of the external canthus, with pressure down to the angle of the jaw, followed by strong pressure at the angle of the jaw and press head backwards.
- 2 - Treat the obstructive condition found in connection with the lachrymal duct: in doing this apply strong pressure with the cushion part of the fingers over the inner canthus of the eye: continue the pressure while you pull the eye outward by traction at the outer canthus; place finger at the inner canthus and hold firmly: continue this treatment down along the side of the nose. Where there is complete occlusion use a probe or sound into the puncta lachrymalis. Use a supple probe shaped like a small hook: and insert and make a double turn. Surgical oculists use a series of probes similar to dilators used in rectal treatment. Continued use of the probes destroy the peristaltic action of the parts treated.
- 3 - Give treatment for the conjunctivitis condition, or for a nasal catarrhal condition.
- 4 - Treat the duct as you would any other part of the body for inflammatory condition - this can be done by giving steady pressure along the line of the duct - treat up and then down: in addition to this give a slight springing movement to the cartilaginous part of the nose: at the same time use the kneading movement to increase the circulation.

This treatment is generally sufficient unless there is a new tissue formation or a chronic inflammatory process. In these cases stimulate solvent action and keep the lymph system thoroughly stimulated so as to cause absorption of the end products that may accumulate. In cases of abscess make use of hot applications, particularly dry heat to diffuse the suppuration. The process of healing is difficult, and a fistula may take place. Pus represents the death of the white blood corpuscles, and is never caused by micro-organism, (Dr. J.M. L.)

If a fistula is established, deal with it from the standpoint of reconstruction. Establish lymphatic drainage and stimulate arterial blood flow. It is a question whether antiseptics should be used in the fistula. The pus formation is sterile unless it is infected: wash out thoroughly with water if it is large enough, pack with gauze.

5 - In cases of excess of lachrymal secretions as in dripping eyes, we have here a catarrhal condition of the canaliculi or the lachrymal duct, causing either an obstruction to the outflow of the lachrymal secretions or a watery exudation from the eye, determined downward to the internal canthus. In this case the nature of the fluid causes a contraction of the puncta with the results that the fluid flows over the lower lid. The exudate overstimulates and prevents the taking up of the fluid. In both of these cases deal with them from the catarrhal side by treating in the neck to free the muscles and by treatment around the eye: at first superficial and then deep to clear out excess of fluid; pressure over the lachrymal sac and also treatment down the side of the nose.

6 - In all cases in which the lachrymal system or apparatus is involved give thorough treatment of the lymph centers in the lower cervical and upper dorsal region. The reaction of the lachrymal secretions is markedly alkaline, and the alkalinity if there is an excess of lachrymal secretions is but slight, not strong enough to cause stimulation of the ducts.

Disease of the eyelids.

In cases of traumatism involving the eyelids - if the case is recent the application of ice to the eye will help to relieve the effects of the traumatism: only keep it on a few moments at a time. In addition to this, stimulate the action of the eyelids by manipulation of the eye, articulation of the upper dorsal and the middle cervical until you have developed heat in the eye, or make hot applications to the eye if the treatment does not accomplish this. This represents stimulation through the blood. Moist heat is best here. Use heat a short time and then apply cold: action all the time will soon kill: we must have reaction as well as action.

In old cases make hot acid applications - use lemon juice. Remember along the line of pain the hot water

will become disgusting to the patient: the skin and blood will receive a slight stimulus from the acid. In cases of severe pain it is best to alternate hot and cold applications.

In Chalazion - Try to remove the abnormal growth or accumulation by pressure between the finger and the thumb, at the same time giving a slight frictional movement: this pressure should be kept up until the obstructed duct is forced open. Chalazion is an obstructed condition of the Meibomian gland. If this treatment is not sufficient to evacuate the accumulation the only thing is to make an incision and evacuate it externally. The reason for that is - chalazion is different from abscess or granulations because it is a lymphatic accumulation and the material will not pustulate and form an abscess for itself, and the great danger is that it will remain like a piece of shot for years. You can soften by treatment and get rid of them in that way, but they will not pustulate for themselves unless there is infection, and that is not good to remain.

Thorough treatment of the lymphatics and blood system in connection with the eye will also be very serviceable in this condition.

In Ptosis - apply stimulative treatment to the 3rd cranial nerve as it follows the muscles into their attachments,

2 - If it is due to exhausted condition of the nervous system give the patient absolute rest: also cover the eyes lightly to exclude the light from them. Along with this give thorough periodical treatment to the centers of the trophic influence in the ciliary ganglion: treat by light pressure against the ganglion - rhythmic treatment, press, relax, etc.

3 - In long standing cases where the nerve fibres have become completely paralyzed by degeneration of the nerve fibre tissues, cure is impossible, because there is a destruction in the terminal apparatus of the eyelid. Now in this case, surgical operations to cut the nerve will sometimes be effective in causing partial regeneration from the center outward: if the terminals of the nerve in the eyelid are destroyed they cannot be regenerated but you may be able to regenerate the fibres partially in that way.

4 - Give thorough treatment in the cervical region downward: then from the 5th dorsal upward. This treatment should be articulation followed by thorough muscular manipulation so as to stimulate the sympathetic chain and ganglia.

Treat down and up because you want to get the last effect through the Sympathetic system.

In Abscess -

1 - the abortion of an abscess can be accomplished by thorough stimulation of the arterial blood circulation - the use of cold or ice compress, light stimulation

- around the base of the development of the abscess.
- 2- If the abscess if developed give the same treatment as in attempting to abort. also apply vibration over the seat of the abscess, first lightly, then more deeply,
 - 3- Stimulate the venous blood drainage and the lymphatic system, both local and general, the upper portion of the body, the head, the eye, etc.
 - 4- In dealing with any abscess condition found anywhere in the body, put your patient on dry food diet, eliminate water entirely from patient's diet. You may think that is not an essential point in relation to the eye, but it is an essential point anywhere in relation to an abscess, however minute.

Where we find multiple abscesses of the uterus there can be entirely obliterated in two or three days by eliminating water entirely without any other treatment. You can also do this in relation to the eye.

In dealing with abscess from the Osteopathic standpoint, do not apply hot applications unless you want to in the average case I do not think it is a good thing to do.

If there is intense pain, alternate hot and cold applications would be of good service, but do not in this case keep up long enough to get fomenting action.

In Inflammation of the Eye

In the acute types

- 1- Bath the eyes every two or three hours with very hot water, allowing the eye to drain itself out thoroughly.

I mention this because you will find some of the oculists advising the use of cotton or gauze to dry the eye, but it is not advisable; the eye is one of the lubricating organs, and the lubrication of the eye will dry itself out if you give it a chance.

If any incrustation or scales have accumulated remove these thoroughly - it may necessitate in some cases the use of a little piece of gauze of some type or a probe by means of which you can simply take them out so as to prevent irritation; that is necessary in some cases because the lubrication and the washing of the eye will not always remove these from the eye itself.

- 2- Find out the cause of the inflammatory process, and do what you can to remove it. for example, it may be due to the eye strain or to color or light.

- 3- Look out particularly for intestinal irritation and constitutional weaknesses, which always express themselves through the eyes; that of course will throw you back on the intestinal or constitutional condition, for the right kind of treatment.

- 4- Give thorough circulating treatment in the neck; that applies both to the arterial and the venous blood system.

- 5- With the index finger apply deep pressure under the

margin of the bone around the orbit, pressing inward and upward against the bone or under part of the orbit, raising the fingers sufficiently to allow relaxation of the pressure. periodically continue this treatment while you give strong inhibitory treatment in the subocciput.

6- Give gentle vibration over the closed eyelid, keeping the under finger steady over the lid, so that there may be no irritation of the eyeball, or conjunctiva.

7- In very acute inflammation keep the eye covered the greater part of the time; take up the covering at times and allow the light to reach the eye - the eye was an organ that was meant to live and grow and have its being in the daylight, and it is not proper treatment to put a person in a dark room unless it is a prison; and then it is not human. If there is a great inflammation use colored glasses.

In chronic types of inflammation give treatment similar to that in acute types, and also look out for typical osseous and osseo-ligamentous lesions in the upper cervical region, particularly the atlas, axis and 3rd cervical.

8- Control the contraction and dilation of the eye and the blood circulation through the eye by thorough rhythmic from the 5th cervical to the 5th dorsal - the entire spinal and vasomotor area in relation to the eye.

This may be called palliative treatment - this is the most thorough treatment we have for controlling the eye movement and the circulation of blood through the eye, and that is what is really necessary in these chronic conditions.

In Trachoma we find the cilia turned inward against the cornea. In simple cases this is due to an inversion and contraction of the cartilage around the margin of the eyelid - treatment to relax the eyelid, and to increase the circulation of the blood to the eyelid will in most of these cases be sufficient aside from correction of the irritating causes keeping up the condition.

It is claimed by some that trachoma gives us a bloodless condition of the eyelid - in a great many cases you will find that is true - a typical case is a full blooded individual, or some one out in the open air all the time where the eyelids are white and bloodless; that has led to a point which I think is partly responsible for the fact that there is some connection between trachoma and a leprous condition.

There is no relation, however, between them. In continental cities, Vienna, for example, they treat these conditions as they do leprosy or lupus, making punctured incisions over the anesthetic point; the idea was to cause enough traumatism, there to draw the circulation of blood toward that point, and it was claimed it was quite successful in a great many cases. Modern investigation, however, has not indicated any relation between these two conditions.

We know Osteopathically that if you cut off the blood

circulation and cause rigidity of the lower lid and the tarsal cartilage, you will have a bloodless condition, which will account for whiteness and anaesthesia associated with the lid.

In some cases where trachoma is chronic it may be necessary to resort to surgical operation to relieve the contraction of the cartilage, and remove the inverted cilia - Where we have double or multiple rows it is necessary to remove by surgical operation or to use electrical apparatus. There is no Oculopathic cure for this

Conjunctivitis

If the conjunctivitis is due to a localized irritation for example, some foreign substance irritating the conjunctival membrane, the substance should first of all be removed from the eye, if possible, or the eye should be washed with tepid water. One of the best ways of washing out foreign substances from the conjunctive is to catch the upper lid and bring it down over the under lid, rubbing it over the under eyelid, applying light pressure, they light friction that will stimulate the fluid secretion and determine the substance downward so that it will be rubbed off on the outer portion of the under lid, Where the lower lid is involved do the same thing, but overlap the under lid over the upper instead of the upper over the lower. If it sticks in the membrane take it out with something soft - flaxseed is good for the removal of foreign substances, but it has a drawing property, and it is better not to use it in a simple case - the lid may be turned back over some object, as a toothpick or small pencil, and remove the foreign body. If you have hot cinder in the eye flaxseed would be of service because it would help overcome the scarification. In all these cases where there is a local irritant wash out the eye, and give it rest, covering up with something light in weight and dark in color. The best thing to use is dark mica or culluloid, any of these simple things; the mica is the best of anything, perhaps because it is a non conductor of heat; also spun glass is good. Rubber or silk shades are not good.

If the conjunctivitis is due to constitutional conditions - for example diseases of the alimentary tract, involvement of the mucous membrane, for example, the throat, diseases of the heart, treat first to relieve or palliate the local conditions, and second to overcome the constitutional disturbances.

3 - If there is eyestrain use glasses temporarily or cover the eyes.

4- Use the cold application lightly.

5- Give gentle pressure from the orbital portion of the eyelid toward the margin, following by light vibration over the eyelid. Overlap the upper lid over the lower, and

then vibrate; treat granulations in this way.

6- Look out for displacements in the upper cervical vertebrae. Apply the springing treatment to the inferior maxillary to reach the tissues along the path of the blood circulation.

7- Apply stimulation to the 5th cranial nerve at points convenient of access.

8- In case of granulations of the margins of the lids.

9- Give local pressure treatment very lightly; follow this by stimulation around the orbit of the eye, light vibration over the Meibomian glands and treatment for blood and lymph drainage away from the eyes.

10- In the inflammatory conditions of the eyeball treatment should not be given directly to the eyeball but simply around the eye; also give treatment in the neck and in the superior cervical ganglion region.

11- In granulated conjunctivitis, give some treatment locally to break down the granulation - for example, pressure between finger and thumb. If you use that treatment always use a little pure vaseline (white) on your finger and thumb; or you can overlap the upper over the lower lid, and apply the pressure in that way on top - press down and allow the under lid to act as a base. (Must not use the carbolyzed vaseline in the eyes; sometimes it is serviceable on the skin, but it should not be used about the eyes or any of the orifices of the body.) Vaseline or pure olive oil is soothing to the eye - cocoa butter is not so good.

Then pick out the granules; here you can use some instrument like those that we have for that purpose, or eye forceps, or in an emergency you can use a toothpick or a hairpin; sometimes you can do it with the tips of the fingers. Use alphezone to sterilize.

Follow this by a general systematic treatment. Place the patient on a diet that is suitable to the condition. Dry, if you want to promote absorption, but an inflammatory condition such as we have here may be either dry or not. Eliminate irritants to the mucous membrane of the stomach and intestines to keep down the intestinal toxemia, because it will react on the eye through membranous sympathy through continuity of structure.

If the temperature of the eye keeps up, make local applications of ice, and heat from the circulation standpoint to keep the blood thoroughly circulating to and from the eye - the upper dorsal, lower cervical, superior cervical ganglion etc.

12- In the Phlyctenular type regulate the diet of the patient (that is the first essential thing in thistype) and remove all irritating or constipating foods that will stir up the action of the liver. Make the patient take exercise so as to keep up the blood circulation (superficial) from the active side; relieve reflex

irritation - for example, constipation, worms, pelvic disturbances of different kinds, etc. The reflex irritating conditions of that type.

13- In the croupous type - attempt to separate the croupous formation by the use of hot water, hot to the point of endurance of the patient. (The old rule laid down by the doctors is to put the hand in the water, in testing endurance; that is not testing the endurance of the patient but of the doctor).

If you begin with a cool tepid application you will make the membrane more adherent. Test over the skin of the malar process when you are dealing with the eye.

Apply this hot water continuously for some time - make the application with gauze or something suitable in applying the hot water.

To assist in breaking down the membrane it may be necessary to use lemon juice (acid).

There is no acid we have with the same power of cutting, with the minimum of destroying power. You can use it in diptheria on a probe covered with gauze - full strength in both cases; bring it into direct contact with the membrane. In order to do that in dealing with the eye you must have a magnifying glass to see the structure of the eye, and to make the application directly to the membrane. Give general treatment to keep up the circulation active, particularly the lymphatic region of the eye.

In the diphtheritic type - Use hot applications freely and continuously, and if necessary, the acid to destroy the membrane. Now in applying this acid, when you do anything after using the acid wash out with salt solution.

14- In the gonorrhoeal type - use hot water to wash out eye washing it out every ten or fifteen minutes, so as to keep the eye thoroughly cleaned.

If you give the eye water it will wash itself; drop water into the eyes with a dropper, and it will wash itself.

In the croupous or diphtheritic type you apply with gauze. In the gonorrhoeal type, use water as hot as the eye can bear without doing it damage. If the condition is persistent, the best thing that you can do is to have a little running stream of hot water flowing into the eye, keep this up for some time. If there is any tendency to pus formation this ought to be kept up for at least forty eight hours, in connection with this use the antiseptic - make the water antiseptic in order to prevent the spread or development of this condition. Treat the system as you would a case of general gonorrhoeal inoculation. Give constitutional treatment to eliminate the toxin, and remember that this is one of the most serious of all conditions we have to deal with; more difficult to eliminate from the system than syphilis.

The reason for this seems to be that the gonorrhoeal toxin has a special affinity for the glandular system, hence the gonorrhoeal condition, if the toxin is allowed to remain in the system, will terminate in buboes. These buboes are nothing more or less than simply intoxicated glands.

If the gonorrhoeal condition is in the eye, the particular point is the Meibomian glands, and you require to treat for elimination. It has not an affinity for the nervous system, as some writers seem to think; the affinity for the nervous system is secondary.

In syphilitic conditions you have an affinity for the blood and it is much more easy to purify the blood than the lymph.

Back of the blood formation is the lymph formation, and the glands, and if that lymph system is intoxicated, all that follows after, blood, tissues etc. will be intoxicated. Whenever in a blood condition you have an uncomplicated case, you require simply to purify it.

In Pterygium - In most of the severe cases of pterygium it is necessary to operate on the case surgically because of the long standing nature of the condition.

In less aggravated conditions -

1- Treat the vascular supply on the surface of the eye ball, which is controlled largely through the ciliary

ganglion and the 5th cranial nerve; there you get the real vasomotor then later the superior cervical ganglion.

2- Treat directly the pterygium itself by pressure and vibration - light vibration gradually increased.

2- The small blood vessels are found in connection with the conjunctiva, consequently the same treatment as in conjunctivitis would be called for (draw upper lid down over lower and give light vibration.)

The surgical method of doing this is to evert the eyelid and insert a little needle into the minute blood vessels and drain out the blood externally.

The Osteopathic treatment is to pull the apply pressure along the margin, and gradually moving pressure from the orbit down.

4- If the tear duct is obstructed, and not associated with some organic growth, but simply associated with a stricture of the duct caused by irritation of the motor nerves, look for some lesion in the upper cervical region, interfering with the motor nerves that pass out from the spine.

5- Give thorough articulation and thorough manipulation to the entire cervical region, in order to stimulate the circulation of the blood, to cause absorption and to stimulate the peristaltic and rhythmic movements in the eye; to assist this gentle pressure and vibration over the eye itself should be given through the eyelids.

6- Grasp the eyelid between the finger and the thumb, and apply pressure deep enough to reach the Pterygium condition; the object there is to cause floating of the pterygium and the absorption. The origin of the pterygium is some traumatic condition, resulting in adhesion on the eyeball itself.

Sometimes the adhesions occur without any pterygium, there you have a sort of connective tissue formation. Sometimes you see on the eyeball little yellow spots (connective tissue condition) in some cases that connective tissue formation aborts the pterygium. That is a point that is of considerable importance in the early treatment of those cases; if you get an adhesion it is not a case for surgical operation, but for very simple treatment to relieve the congested condition and allow the traumatic condition to heal up just as in any other part of the body. The eye, like other serous membranes of the body, will heal very rapidly if allowed to do so.

Diseases of the Eye itself.

a- Diseases involving the optic nerve. This means in most cases disease of the retina, because the retina represents the terminal apparatus in connection with the optic nerve. These conditions require most careful diagnosis in order to discover the stage of the disease, because the stage of the disease determines the type of treatment.

1- Find out the causal that is, the exciting cause, and treat that in order to prevent further development; that means, of course, diabetes, Bright's disease, etc. In many cases of optic nerve and retinal diseases are associated with vertebral lesions in the cervical region, contracted condition of the cervical muscles, obstructing the nerve force as it passes toward the eye.

If the case is extra cranial, the correction of these lesions will give at least some slight improvement - if the lesions or disturbance is intra-cranial (the optic field in the brain) you will not be likely to get improvement for some considerable time.

In testing the condition of the retina, this is best done by use of a strong electric light; depending on the reaction that will follow from the action of the electric light on the retina.

2- Stimulate the optic nerve by a light tapping treatment over the eye itself, followed by a light pressure gradually increased up to the point of pain in the eye; pain represents the fact that you are getting your pressure up to the standard of the retinal membrane, because that represents the sensitive plate which is the terminal of the optic nerve.

3- In Retinitis - treat thoroughly in the cervical and upper dorsal region in order to reach the spinal fibres of the optic nerve, and to get the action of the oculo spinal center.

One point in the treatment of eye conditions that you want to note is that the eye conditions of all types do not call for as frequent treatments as some other conditions; twice a week is as often as your cases ought to be treated - in some cases once a week is enough. That is because of the delicate structures of the eye and the repair processes are very slow in the organic structures of the eye.

In cases that are due to diabetes, Bright's disease, rheumatism, etc., you require to clear up the eyes through the treatment of these conditions. Wherever there is a complete solidification of the lens the only thing that can be done is surgical operation. The reason for that is apparent; the lens is a structure by itself that we have very little control over from the blood field. The removal of a cataract is a simple process in the surgical field. the old method of using a knife for the operation is best - the knife inserted at the proper angle and given a particular twist, and the lens will slip out without any hemorrhage.

In chronic eye trouble associated with catarrh
1- Try to relieve the condition that is interfering with nutrition, cataract is an outgrowth of solid materials; it solidifies the lens. This is caused by malnutrition in the sense of over - or hyper-anabolism from the standpoint of the waste elements. The nutrition of the lens is normally dependent on the nutrition of the eye-ball; in general therefore, to correct the nutrition

of the eyes as a whole.

Now this is the reason why the osteopathic cure of cataract is a slow process; there are many cases that have been treated Osteopathically that have not been cured, either from the impatience of the patient or the physician. There is a long time that you do not get definite results; it is like dealing with the nervous system; if it involves any destruction of the nerve tissue your physiology teaches that the reconstruction of the nervous system can take place in from fourteen months to two years. You could not expect to get results in less time than that; where the eye is involved you have a condition that is just about the same, so far as the time is concerned.

2- Correct the errors of refraction by the use of glasses.

3- In the case of structural changes - for example, myopia, astigmatism, etc, give thorough treatment to re-establish the normal blood circulation so as to nourish all parts of the eye equally.

4- In cases of corneal astigmatism - there is generally an impairment of the 5th nerve; in such cases nutrition requires to be distributed to all parts of the cornea. Where the lens is involved in the impaired nutrition, re-establish the blood circulation by thorough treatment of the cervical and upper dorsal regions that is more important than the correction of the lesions. Correction of lesions is important in its way, but it is more important to re-establish that nutritive condition.

5- Give direct treatment over the eye itself by placing the fingers directly over the cornea and pressing, gradually increasing the pressing, and giving a movement which will affect the whole eyeball.

Use the finger to massage the eyeball, not through the eyelid, but the eyeball itself directly. In that case you require to make your fingers aseptic before you get into communication with the eyeball.

6- At the same time stimulate the cervical Sympathetics and the 5th cranial nerve, in order to reach the interior of the eyeball reflexly. Now there are some cases in which it is said that the mild use of the Faradic current using the fingers the same as in massage of the eye, making the finger the medium in passing the current to the eye, is beneficial; I have never found it so, but it is of service in diagnosis - you can test the presence of inherent light in that way, but I do not think it of sufficient importance to use the electricity. You will get results by vibration place one finger on the eye, and vibrate with the other finger up and down, making the vibration pass down through the finger to the eyeball; in that way you get results.

e- Iritis - If the iritis is traumatic, and a recent traumatic condition, make applications of ice (9 sac or pack) and at the same time treat for blood drainage, articulating

downward from the 5th cervical to the 5th dorsal.

2- In the rheumatic and syphilitic types, treat in connection with the disease causing it (the rheumatic and syphilitic conditions from the same standpoint as we discussed in connection with those other diseases.)

3- In some cases we find a specific lesion in the form of muscle contraction and some displacement of the 5th cervical.

4- To control the inflammatory process give strong inhibition in the lower cervical and upper dorsal region.

5- Treat the splanchnic area to determine the blood circulation toward the abdominal cavity; you will find that is one of the strongest of all treatments that are available to use in connection with inflammatory processes about the eyes.

6- In order to prevent adhesions in connection with the capsule of the lens; give treatment to cause dilatation of the pupil of the eye (inhibit at 2-3 dorsal and the spinal nerve area of the inferior cervical ganglion). that means treatment three or four times a day; you can keep up the dilatation in the average case from three to four hours - sometimes less - that depends on the individual case - that is your best method of overcoming the adhesions, or the tendency to adhesion.

7- Bathe the eye at least twice a day in hot water to the point of physical endurance.

8- In Choroiditis - in addition to the treatment in iritis stimulate the blood supply to the eye thoroughly in order to increase the free arterial circulation of the eye - (treat vasomotor system) relax the muscles - stimulate the spine in the dorsal region, then stimulate the sympathetics up to the occiput.

9- In these inflammatory conditions stimulate all direct treatment to the eye itself and the orbit of the eye; at least until the inflammatory process is under control that is until the eye begins to cool down in the physical sense of the term until the heat in the eye noticed by the patient begins to pass away, and there is a coolness in the eye. If the eye begins to show symptoms of coldness or chills, then treat the eye and the orbit of the eye locally. We find chills of the eye, chills of the ear, and we find chills of the tongue, sometimes. cited cases where man complained of chills in some of his toes, one particular toe is chilled, the rest of the foot being normal. It is more cold spasms that we technically call chills, but it can be traced back to the nervous system it is a nervous condition.

In this particular case this condition can be overcome by rotation, extension and flexion of the sciatic nerve, and the shilly sensation converted into the opposite condition. A general chill is rather too sudden change from constriction to dilation; its, more rapid than is the normal vasomotor. This is different in the localized;

in the eye it is excessive constriction - it is a reaction from the dilation, because you have stirred up by this treatment, and there is a tendency to recovery. We have this condition in inflammatory conditions in the spine, for example, chills in spinal meningitis, and the quantity of blood in the eye is much larger than in the spinal cord; that is why you have action in one and reaction in the other.

d- Diseases involving the cornea and sclerotic

- 1- If these conditions are due to conjunctivitis, treat along the same lines as for conjunctivitis itself
- 2- If it is due to constitutional disturbance attend to the constitutional condition, and especially to the 5th cranial nerve and the cornea, and the close connection of the 5th cranial nerve to the Sympathetic System. Any disturbance of the cranial nerve may involve the cornea, secondarily, and any disturbance of the sympathetic system may react on the cornea through the 5th nerve. Now, of course that takes in the whole field of visceral action, and the visceral disturbances may be the cause of a corneal ulcer.
- 3- Dilatation of the iris by inhibition in the oculo-spinal area applied three or four times a day, before the application of the dry heat to the eye in corneal and sclerotic conditions is palliative, particularly if the eye is at the same time shut off from the light.
- 5- Keratitis - Relax the tissues around the ciliary ganglion by light pressure over the eye, gentle rhythmic treatment over the eye, dry heat applications, inhibition in the upper cervical region, inhibition of the 5th cranial nerve at accessible points, keeping the light away from the eye.
- 6- Diet of the patient- The diet will be non-irritable and as dry as possible, depending upon the water supply of the system to furnish enough fluid to keep it in fluid form; food that is easily assimilated.
- 7- In Pannus and Staphyloma - treat the condition as a complex conjunctivitis, particularly freeing the surrounding light vibration to the eye itself.
- 8- In Sclerotic inflammation - relieve the constitutional conditions, irritations, for example, in the constitutional disease. Give local treatment to the eyeball; and apply dry heat to the eye. Look for the contracted muscle conditions in the upper cervical region.
- 9- In Trachoma -
 - a- Give general treatment to the neck, and keep the neck thoroughly relaxed, even if you have to treat daily.

b- Use the index finger gently and deeply to move the muscles around the eye pressing the fingers around the orbital itself, and to relieve the pain that is found around the eye.

c- Press the eyelid and the eyeball between the finger and thumb on the horizontal plane - follow this up by stretching the eyelid between the inner and outer canthi, and the treatment between the finger and thumb around the margin of the eyelid similar to granulation, in order to stimulate the circulation and arouse the Meibomian gland secretion.

Refraction -

We discuss the subject of refraction from two standpoints -

- 1- From the standpoint of the anatomy of the muscles of the eye.
- 2- From the standpoint of the physics of optics.
(the practical side of optics)

In connection with the first part, the relative size of the eyeball to the orbit is about one half, on account of the large space that lies between the eyeball and the optic foramen. Outside of the eye, in the orbit, we find the optic nerve, blood vessels, lymphatics, muscles, fascia and adipose tissues acting as a soft cushion for the eye.

The dividing membrane between the intraorbital tissue and the eyeball is called Tenon's capsule; it lies behind the conjunctiva, and extends almost to the margin of the cornea. The large amount of tissue in the orbit permits of change, either in the eyeball or surrounding tissue - for example, the formation of tumors, the development of abscess, foreign bodies or growths deposited in the adipose tissue. In regard to the location of the eyeball in the orbit, we find that the eyeball is closer to the upper and lower borders of the orbit than to the canthi, the greater distance between the eye and the wall of the orbit being at the outer canthus.

This means that it is easier to reach the intra-ocular structures from the outer than from the inner canthus. That applies in surgery for example, in the enucleation of the eye, it should be done from the outer canthus. There is one point that should be noted here and that is, that in the left eye as compared with the right eye the optic nerve is more easy of access from the inner than from the outer canthus. This probably has something to do with the fact that the left eye is weaker than the right eye when either eye is defective.

The fascia that we find in the orbit of the eye is of importance principally because it forms the ligament of the cheek, Tenon's Capsule and the suspensory ligament, this latter ligament forming the eyeball from dropping downward? These ligaments, particularly the ligament of the

check, prevents the recti muscles from incoordinate action and also in surgical divisions of the recti muscles prevents the eyeball from dropping too far down.

Tennon's Capsule surrounds the posterior two thirds of the eyeball. This capsule is a delicate, transparent membrane, fibro-membranous in structure: it is formed from the posterior and portions of the anterior lamina of the fascia extending from the recti muscle insertion over the sclerotic to the point of entrance of the optic nerve where it reflects back over the sheath of the optic nerve to the apical point of the orbit. It does not pass into or become a part of the sheath of the optic nerve: it blends into the formation of the two lymphatic spaces that communicate with each other, the one space called Tenon's space communicating between the capsule and the eyeball, and the other sometimes called Supra-vaginal, communicating between the capsule and the nerve sheath.

A point of importance in the treatment of the eye is the little notch at the outer canthus, where you have power to inhibit and drain the orbital fascia in connection with and into the lymphatic spaces, draining the check fascia into the lymph spaces that go down into the mouth, nose, etc.

In the orbit we find free areola tissue that allows free movement of the eye, the eye itself being set in the orbit in a kind of ball-and-socket articulation, Tennon's capsule representing the synovial structure: that is the lining membrane of the socket, both for lubricating and movement purposes in connection with the movement of the eye. The modification of the refracting media depends on the articulation of the eye - the eyeball articulates in its socket, and is held in normal articulation position -

a- By the recti muscles -

by- By Tennon's capsule, or the lining membrane of the socket.

This capsule in turn is held in its place by the orbital fascia and the ligamentous attachments from the fascia. The muscles of the eye are particularly attached to the capsule: hence, the movement of the eye may take place entirely independent of the optic nerve. The condition of the eye following surgeon's enucleation will still give movement because of the capsular attachment of the recti muscles and the recti attachments to the eyeball, and the attachment of the eyeball in turn to the orbit or structures articulating with the eyeball in the socket.

In refraction from the anatomical side, the muscles play the most important part -

I- The extrinsic muscles consisting of the four recti muscles that pass forward on either side of the eye to be inserted anterior to the eye in front of its equator.

2- the palpebrae superioris muscles - from this stand - point the important fact to be noted is that the levator muscles form a broad aponeurosis between the two parts of the lachrymal gland, and then divides into three lamellae. The highest lamella blends into the superior orbitotarsal cartilage; the lower lamella is united with the fornix of the conjunctiva, the lower border of the tendon being united with the margin of the orbit prevents the abnormal action of the eye. You have seen eyes perpetually moving, where it represents an interference with the levator muscles.

3 - The superior oblique muscle uses its pulley force to rotate the eyeball inward, and to direct the cornea downward: this means from the side of the refraction that the superior oblique muscle draws the cornea into an axial plane at an acute angle to the direction of the force originated by the superior oblique muscle itself,

That does away with the necessity of cutting or partially cutting the superior oblique muscle, because if you cut it you destroy the possibility of ever correcting the axial plane, and step by step gradually obliterate it.

4 - The inferior oblique muscle originates in the anterior portion of the floor of the orbit, the fibres passing posterior as well as anterior, and then upward, encircling the eyeball so as to secure insertion by the upper surface of the eyeball. The refractive function of this muscle is antagonistic to the superior oblique muscle action. The two oblique muscles then act normally in antagonism to maintain the normal axial plane: when the eye is in abduction the two oblique muscles act in harmony with each other rather than in opposition.

From the standpoint of what we call physical anatomy, the eyeball is to be regarded as an apparatus to bend and reflect the rays of light - later to refract the rays so that the light rays may be divided into what optics call "pencils of light" (subdivision of rays), these pencils coming to focal points on the delicate retinal membrane, that is constructed from the physical anatomy point of view as an end organ of reception (for rays of light) - The physical function of the retina is to concentrate the rays of light so as to form impressions: these impressions when summed together, forming a picture which is to be reported to the brain through the optic nerve.

As a physical apparatus the retina contains the terminals of the optic nerve entirely distinct from all the other nerve connections of the eye, so that the physics of light and color may be entirely distinct from the physics of movement. In one sense the other nerves contribute to the optic nerve by generating or helping to generate or transmit the waves of light that are to stimulate the optic nerve apparatus.

In the terminal of the optic nerve in connection with

the retina we find a delicate apparatus susceptible to stimulation only by light. We see objects because the objects reflect light on the retina. Refraction is a secondary process, hence, if light is absent, no object can be seen. Light can be present only in connection with the ether waves - hence the sensation of light depends upon the transmission of these ether waves and their reception in the rods and cones of the eye. The rods and cones are not pointed in the direction of the light as it passes through the pupil of the eye, but they are pointed back towards the sclerotic. The result is, that the waves of light pass through the nerve fibres, the granular and cellular structure of the retina, before they come into contact with the rods and cones - hence the rods and cones are not as some have supposed; receivers of light, but are specific terminal organs to receive the influence of ether waves. These rods and cones are found at every point of the retina except at the point where the optic nerve enters the retina: this corresponds to the blind spot in the eye. The highest degree of sensitiveness is found in the outer side of the entrance of the optic nerve in what is called the fovea centralis: at this point the nerve fibres bend as radiating fibres in the direction of the rods and cones. As we pass toward the peripheral portion of the retina sensibility diminishes: the meaning of this is that in refraction central vision and not peripheral vision is tested in connection with accommodation and acuteness of vision.

In testing the eye for its perception of movement and the power of the eye to differentiate degrees of light, both the peripheral and the central vision field must be tested. The peripheral is more sensitive than the central: this means we have the types of vision -
 1 - Static vision - the vision whose perception is associated with static objects -
 2 - A vision whose perception is associated with moving objects.

With this double kind of vision, visual sensation is one of three types -
 1 - Vision that perceives the form of an object: this means from the psychological side, the perception of an object in space -
 2 - Vision that gives us the color of an object - here we have the analytical vision that differentiates colors.
 3 - Vision in which we perceive light, giving us what may be called the luminosity of an object - here we have the synthetical sense of vision, or measure the amount of light the object is reflecting: we measure the light and distinguish between a light and a dark object.

In walking, peripheral vision is what aids us in maintaining our position in relation to other objects / for example, we see something in front of us: this is

shown in the peripheral vision, sometimes found in one and not in the other.

In standing at rest and in concentrated vision, central vision is of the most service.

Peripheral vision may be called emergency vision, saving the central vision the trouble of constant activity and warning the mind as well as the eye of objects that are coming into the field of vision. This is particularly true of objects that are in motion because the peripheral parts of the eye have a higher sensitiveness in the perception of movements; that is the reason why the turning of the eye takes place in connection with the appearance of any object that change from motion to rest, and this accounts for the rolling of the eye of an animal when the animal becomes excited the eye rolls in all directions; the object being changed from the peripheral to the central field of vision.

In one case the object is thrown into the fovea centralis and thence to the central, but in the other case it is thrown from the peripheral into the central.

In the accommodation of the eye two things take place from the physical side -

- 1- Focusing of the image
- 2- The sharpening or increased acuteness of the angle at which the image of the object falls in relation to its focus; this differs from accommodation.

Accommodation of the eye has more reference to the acuteness of the angle than to the focusing - the connection with contraction or relaxation of the ciliary muscle. The lens becomes more convex when an object near at hand is looked at; it becomes flattened when the object is more distinct.

This is caused by antagonism or increased tension of the circular ligament in which the lens is suspended and the ciliary muscles; if the muscles are lax the ligament expands and this flattens the lens. If the muscle contracts the ligament relaxes and the lens becomes more convex on account of its elasticity. Here we have the physical converted into the physiological. The reason is that the lens is more refractive the more the muscle relaxes, hence, accommodation for near objects is more active accommodation for distant objects more passive.

This explains conditions in the child. All children have the myopic sight at the time of birth; a child must accommodate to the near vision. The contraction of the pupil and the processes of converging take place in the act of accommodation. Binocular vision is a single object mirrored as two objects in the two eyes, the cones point in the same direction.

In perception of distance the eyes are continually moving in connection with convergence and divergence. Contraction and relaxation equals accommodation in order

to take in the whole field of vision. The extension of this field is in three directions, or in three dimensions of space, corresponding with the three types of vision we found before, viz. some distant, some less distant and some near. Hence, in the perception of distance it is essential to have two eyes. In shooting the eye is closed, but not until the distance has been located with the two eyes - perception of distance.

Perception of size or dimension.

Dimension or size depends upon dimension in connection with the retinal image. The rule laid down in the refractive field, is, that the retinal image increases in proportion of the increase of the visual angle - the more oblique, the greater the perception of size.

The visual angle is determined by the distance of the object, the perception of the distance in relation to the objects in space determining the size of the object perceived. For this reason a large object at a great distance becomes a small object at a near distance, or vice versa.

Size is also materially determined in vision by this fact that an object is well defined; this is termed the law of difference between a good and bad painting. In one case there is a fine outline; in the other the lack of this. This applies to beauty in any feature of form.

This explains one point - painting or artistry, to be perfect, must be associated with the human form, according to the old Greek philosophers - a woman has more of definite form than a man. Michael Angelo was interpreting his own vision in his sculptures.

In the perception of color.

Ruskin's criticism was the mental translation of his visual perception of distance, size, and we take instead of size or form the chemical reaction of the different parts of the retina itself instead of dimensions being reflected on the retina color is aroused as subjective sensation - for example, all of the colors are either continuous from the spectroscopic or complimentary from the complex saturation side. There are three primitive colors - red, yellow and blue.

If we take the color of green, we can pass from green

a- Through a series of greens that are tinged or saturated with yellow until we get the distinct color of yellow.

b- Through a series of bluish green until we reach the color of blue.

c- One peculiar characteristic of all these colors, whether spectroscopic or saturated, is that when the color is paired with another color we have the sensation of white. These colors are called complimentary; for example spectral red and greenish blue etc.

d- The characteristic of the spectral colors is that the sum total of all these spectral colors added together give us the radiant white light, as of the sun.

In the X-ray there is a certain element of color that is violet, but farther away we get white light. The violet rays will burn; the white will not.

In regard to the length of time that is occupied by the luminous sensation - the duration is greater as the luminous rays get away from the point of origin you see this in the luminous tails of the shooting stars (these are similar to sky rockets.) This causes a certain amount of shock to the eye, because when the duration is increased the eye receives the after effect stimulus rather than the direct stimulus. In the rotation before the eye of a disk, alternating white and black, there is the alternate stimulation of the different parts of the retina, together with the rest. If the rotation becomes more rapid the black and white sensation will cease, and we will get the sense of gray. This means, as the rapid revolution takes place the eye receives a certain part of the white and black stimulus, and this forms a gray. Negative after images represent the partial fatigue of the retina - for example, stand up and face a bright light, then without taking the eyes from the light turn it out; the light is still seen.

Objects that reflect light represent degrees of intensity - for example, there is no such color as black. Black is simply an optic sensation. This means that black is abstract as far as the retina is concerned - there is never the absence of luminous sensation. Dark ness is simply a relative light; this is sometimes spoken of as idic retinal light; that is, it represents after images. All light in objects reflects with a resultant sensation. The greater the degree of the reflection of the object the greater the degree of luminous intensity.

In connection with the perception of color, the increase of light enables us to distinguish more clearly the color - first blue, then red, then yellow. Then there is a stage of indistinctness of color as each color comes closer to the white light - this can be demonstrated only on the ocean; the sky is blue and the ocean greenish at early morn or at evening, our vision is clearest at that time. The highest intensity of light is the white light, because it represents the blending of the complementary colors. When this white light is at its maximum of bear able intensity it really represents loss of color. The result of this is a blinding effect upon the eyes. It does not represent, as some have claimed, a mixing of sensations, but it is the substitute of one sensation for another, caused by an alteration in the nerve process. For this reason white clothing and an entire white environment is not suitable for children, because it represents the negation of color, and has a blinding effect upon the eyes of the child; in some cases it is the immediate cause of conjunctivitis in children. A child dressed in white and sitting in a white perambulator in the sun cannot keep its eyes upon; it tries to shut the

light out.

In connection with this, another point of importance in connection with children is the use of bright colors to attract the attention of the child, particularly when the eyes are compelled to converge to an extreme degree. This extreme degree of convergence, in connection with the bright colors, causes or tends to cause a squinting condition of the eyes. This squinting condition, when added to the blinding sensation, causes hyperemia, and in many cases results in chronic congestion of the eyes, particularly the left.

There is an element there of the same condition that we find down along the left side of the body - that is, the right angle of the blood supply; that is there the same that it is in the innominate area.

In children we find either myopia or hypermetropia. Statistics among children indicate that in England hypermetropia, in the United States, Germany and France, myopia predominates.

Astigmatism is common in the United States and England; the myopic condition develops as the education of the child advances - for example in common schools from 10% to 15% of the children have myopia - in the high school 35% to 40%, and in the colleges and universities, 75% to 80%. Of course that means that the educational system or certain elements of the educational system, is the exciting cause, not of the development, but of the continuance. (The physical condition of the environment, and the eye strain of the mental work.)

The distance of the normal eye is 14 inches.

Anemia - results from over stimulation of light or from blinding sensation of luminosity. In some cases it is the result of inequality in the two eyes. among the results we find are headache, gastric disturbance originating from the ophthalmic over stimulation.

One of the first forms in which we find the over-stimulation is simple conjunctivitis; such a conjunctivitis in the child's eye calls for absolute rest. In addition to this, acute conjunctivitis is exceedingly contagious; if you apply the same principle to that disease as to other contagious diseases, it would mean that children with that condition should not be allowed to go to school.

A type of this conjunctivitis is sometimes called Pink eye, in which we have a very distinctive type of contagious disease. The secretion in connection with pink eye contains a bacillus almost as well marked as in tuberculosis. This should be considered in dealing with these conditions in children; perhaps the only treatment necessary is to rest.

One of the common causes for aggravating the conjunctivitis is the use of eye lotions, particularly where there eye lotions have an irritating effect on the conjunctival

membrane.

In the adult we find similar conditions of the eye, due to other causes - for example one of the common errors in the use of the eye is to use the eye for very close reading or close work when the body is not in an erect position. There is more damage done to the eye in one half hour, than there would be reading closely for a whole day, because of the extreme tension brought on the eye to throw the eyeball downward (to change the orbit of the eye).

Another common cause is to be found in the light, which should always normally fall on the field of vision from the left side of the body; the best light, of course is daylight; next to this is the Welsbach light, then what is called incandescent light.

The electric light is not good unless it is either shaded or shadowed by the sanded glass or porcelain shade over the light.

As a matter of choice between lights, the old kerosene light is better than the electric, provided that the light is located in such a way that you do not get a radiant light, or shaded to protect the eyes; the most soothing is the kerosene shaded light. Candle light is bad because it is not a steady light, the flickering causing an indistinct field of vision in connection with the eye.

Another element is the use of tobacco; there are some writers who claim that the use of tobacco clarifies the vision; it does for the time, like alcohol - it over stimulates, and to that extent gives you a better vision, but the strain is greater - results in injury.

The same principal applies to alcohol, morphine, cocaine etc. People who work in tobacco factories have deficient eyesight.

Another substance deleterious to the eye is arsenic, which has a very strong affinity for the optic and auditory nerves, and the brain.

In treatment of the eyes from these refractive, the use of glasses correctly refracted, at least temporarily acts as a palliative and tends to save the eye for the time being, and to allow other means to be used to correct the causes. The most important point in the use of glasses is to have the central vision refracted; that is to have the glass in such a way that it will refract the central vision instead of the peripheral vision; when you change the position of glasses in connection with the eye you are changing the central vision. Keep the glasses absolutely in the same position, and preserve the same field of vision.

In all cases where the vision is defective, if the defect is associated with refraction, correction ought to take place at least temporarily in order to preserve the condition of the eye until treatment will correct the cause.

Lenses of different kinds have been in common use since the twelfth century. The uses of the lenses in connection with the eye maybe classified under two heads -

1- The use supposed to be served by the older ophthalmologists - these supposed that the lenses were for the improvement of vision alone;

2- Modern use of lens in diseases of the eye; viz. that lenses are used -

a- From the adjustment side to correct adjustment in muscular tension or in physics of vision. Now that throws you back to the visual angle and the perception space etc.

b- To provide at least temporarily an artificial stimulus that would exert an influence upon the ocular nerve centers.

c- Correct refractive conditions in connection with the radiant light, so that the radiant light may stimulate the retina.

Now these are the three points that represent practically the modern view of refraction - the old view was that it simply corrected vision.

The idea of putting two glasses directly in one upper and one lower division is an oculist's idea - it is wrong in theory as well as in practice, because it is pure and simple physics, and does not recognize the three points.

In this sense of the term it is proper to speak of Therapeutical refraction, because it is rectifying the abnormal condition of the eye, and the functional activities of the muscles, we at the same time correct, or attempt to correct reflex disturbances that have their seat in the ocular nervous system. This does not apply to the presbyopic eye; if the eye had represented a perfect or definite optical system, then the correction of the deficiencies in refraction would have been a simple matter of optics or physics.

Physiology, however, points out that in most normal eyes we have not a perfect optical system; we have as a matter of fact an optical system with certain errors that are found in most perfect eyes. The explanation of this is that the physical optical system is engrafted on to the animalism or the vitalism of the human body; that is in the normal eyes we have.

a- An optical system with physical capacity.

b- This physical capacity functions at the stimulation of and through the medium of the vitalized organism

c- The physics of the optical system are subject to the regulative action of the nervous system.

This means that the physical function of the pair of eyes depends on a vital action and stimulation of fourteen muscles - two ciliary and twelve recti muscles.

These muscles represent the action of the nervous

system on the optical apparatus and causes variations.

- 1- In the rotary movement of the eyes; and
- 2- In the dioteric movements?

The net results of the physics and the physiology of the muscle action is -

- a- Accomodation.
- b- Convergence
- c/ Continued parallelism of the visual axes.

This differs from the view of the opticians; we must not consider the eye as a purely optical apparatus. The main principle which acts and reacts on the ocular sensation and the dynamic activity of the eye, is light in its radiant form (pencils or rays of light.) This light represents, as we have found, a luminous or rather luminiferous ether (luminous - giving light; luminiferous gives and carries light.)

An object is seen only if the light of the object is thrown into the eye.

This luminiferous ether acts as a stimulus to visual perception. In doing this -

- 1- It enters the eye -
- 2- It is focused on the most sensitive portion of the retina - the macula lutea-

3- The light strikes, or rather must strike identical spots on the two retina at the same time in order to satisfy the conditions of the binocular vision (that is the point we mentioned last night about the adjustment of the glasses - you must set the glasses identically the same; the same is true of children sitting in school and the light there is in cross directions.

The functioning of the eyes then, depends on how the light enters the eye, how the eye receives the light, and the way in which the sensitive retina responds to the light stimulus. changes in refraction deficiencies, in muscular action, cause the disarrangement of the rays of light when they enter the eye; within certain limits the muscular power of the eye has power to correct this disarrangement of the light, but if this becomes a strain to the eye muscular tension results in a more or less permanent lesion, and the result is deficient vision. It is in this muscular condition that we find the benefit of lenses -

- 1- To modify the rays of light as they enter the eye, or -
- b- to direct the correct impingement of the light rays upon the correct points of the retina of the eyes.
- c- excessive muscular tension; in this respect the lens gives an Osteopathic treatment, because it has a depressant action on the oculi motor centres.

As a matter of fact, from the standpoint of Osteopathic optics the various forms of lens really represent two types of treatment - stimulation and inhibition of the oculi motor centers - for example, what are

called the plus or convex lenses in addition to converging rays of light cause the relaxation of the muscular contraction, as in case of hypermetropia - hence these lenses, if correctly used, give an oculi motor inhibiting treatment.

The minus or concave lens, in addition to diverging the rays of light, tend to stimulate muscular activity, and therefore gives a stimulating Oestopathic treatment to the oculi motor centers. Prism glasses combine the two qualities. Prism glasses give the two types of effects - that is they act as a stimulative or inhibitory treatment very much the same as a rhythmic treatment, alternate inhibition and stimulation, or the reverse. The nature of this complex result depends on two things - 1- The position of the prism in relation to the eye; and 2- The way in which the prism is applied - for example, if the prism base is directed against the heterophoric eye the result is an inhibitory action; if it is placed in the line of rotation of the eye, its effect is stimulative that applies to the oculi motor centres.

The effect of one of the lenses is -

First - primary or direct - namely, the correction of visual conditions from the physical or optical side in relation to reflection and refraction of light and its reception and modification by the eye.

Second - a primary psychological affect in connection with visual centres, this affect is two fold -

a- On the ocular nerve centers, either in the form of stimulation or inhibition -

b- From a purely psychological standpoint. By this we mean that perception is a psychological process.

Now, what I mean by this is, that if the eye were blind from birth up to 30 years of age, for example, and it was suddenly opened up to the vision of external things, or the physical side, you could not know what it was unless you have some means of identifying it, consequently perception implies the mental side of the process; the German writers call this visual objectivity. The objective world outside in the eye of the individual, and the eye of the individual under the control of the mind, the mind becomes acquainted with the external world through certain retinal images. When lenses are used to correct defective vision the mind recognizes changes in the retinal image produced by the correction of vision.

Now you see that means a complex mind process; the mind knows what it can see by itself and what it can see by lenses, and the comparison means reception.

Third - The net result of all these changes produced by the use of the lenses is that there is a secondary psycho physiological change - psycho physiological because the physical change is produced from the psychic side.

The meaning of this is that the use of the lenses produces either contraction or relaxation -

- a- Of the sphincter iridis -
- b- Of the ciliary muscles
- c- Of the 12 recti muscles.

Now you will notice that there the reaction is complete, and that is where the Osteopathic theory differs from the optician and oculist theory. The oculist's idea is that if there is a weak muscle, you have only the strength of that muscle to coordinate the action of that muscle with the action of the other muscles.

The Osteopathic idea is to correct the sense of vision, and then you have a redistribution of the energy, which will affect all of the eye as well as the iris proper; This change in function affects primarily the iris. Now this is the part of the eye not taken account of by opticians, and consequently we will discuss of the iris first.

The Iris - represents a diaphragm in connection with the admission or exclusion of light to and from the eye.

If we could place the iris under a highly magnifying microscope we might divide the iris into sections corresponding with segments or segmental parts of a circle, each little segment representing some particular portion of the body.

In this sense the iris is a diaphragm or blackboard on which the different organs of the body record changes in the organs themselves - for example, in the iris of the eye we can trace changes in the ear, lungs, chest, the liver, gallbladder, bladder, spleen, stomach, skin, etc.

Stomach conditions for example, are marked by changes directly around the pupil of the eye. Diseases involving the skin and lymphatic system are found in connection with changes in the peripheral portion of the iris; for example, you have signs of syphilitic lesions, as well outlined in the eye as in the seat of its location.

The signs or marks association with the iris may be classified as follows;

- 1- Small white specks appearing in the form of minute, white cloudy spots -
- 2- Localized accumulations of the vaporous element. Distinctly marked white lines, clearly defined, representing the growth or abnormal accumulation of some kind, representing a growth or deposit.
- 3- Dark shadings appearing like black shadowy clouds enclosed by white lines. Black vaporous accumulations marked off from the next area by a white line - the white line comes first, then the black cloudy condition is next represented - pigmentary condition.
- 4- Distinctly marked black spots or specks - through the ophthalmoscope it looks like a little cinder.

5- Minute colored spots or specks - the white coloring is always an indication of the increase of the blood flow to the tissues of the eye, with localized increase of temperature - for example, hyperemia, exudation, congestion, infiltration, diapedesis - all or any of these may be indicated by this coloration.

If the blood supply becomes absolutely normal in its distribution, then the white spot or spots will pass away. These white spots are always found in all acute diseases, either directly of the eye itself or that react upon the eye - for example, acute conjunctivitis or acute gastritis reacts upon the eye and give this white coloration. During the period of recuperation from an acute disease we find development of the colored spots and specks - these colored spots and specks are most near the normal condition of the eye than any of the others. In acute inflammatory conditions we find white lines, and there is generally more or less pain in the eye. These lines are extremely delicate. During the process of inflammatory resolution the delicate white lines change from the open to the closed white lines. Now, these white lines always appear in pairs or double pairs or multiple pairs.

These white lines may gradually disappear, or as is frequently the case, the line may continue for years, representing a chronic condition, and indicating lessened resisting power in this portion of the eye. It will also indicate by its index or registering function some condition in some other field or some other organ.

In No. 3 dark shadows by white lines, we have a typical index of a chronic inflammation in the majority of cases; this indicates a change tending towards degenerative process, the tissues breaking down until we have an incurable condition. In the process of gradual removal the shading of shadow clears up, and if the shading after slightly clearing remains permanent it is an index of calcification process that marks tuberculosis in some other parts of the body.

In this case the shadow is always in a circle or semicircle; when it clears up you have little lines inside that gradually clear up - in the tubercular condition the shadow still remains, and instead of these lines you have a little speck, the color spot or speck indicating a partial or entire loss of substance. In some cases this loss of substance is beyond regeneration - for example, it involves entire areas around the pupil of the eye. In dilatation of the stomach we find thickened rings right around the entire pupil margin, with this change of color, yellow if bilious.

We also find delicate semicircular lines following a peripheral margin in all nervous diseases. That is one of the most marked of all conditions we find in connection with the eye. Sometimes you get these things in

chronic nervous diseases - in the concentric circles all over the entire surface, white circle or semicircle.

The iris is supplied from the nervous side by the long and short ciliary fibres that originate from the ciliary and Gasserian ganglia; that is in connection with the 5th cranial nerve. This means first of all that there is a close connection between the iris and the sympathetic system - this means that iris activity is a visceral activity largely peristaltic in its nature.

2- Communication is established in the cerebrum by means of the commissural fibres; these fibres are the pathway along which reflex influences are carried that lies at the foundation of the headache - localized headache at one particular point or points represent the weakest point of the nervous system in the brain.

3- Communication is also established in this way with the nerve tracts from all the different parts of the body through the spinal cord; here we have the basis for reflex headache from the different viscera, as pelvic or stomach; kidneys may be described as being at the back of the eye.

In the microscopic examination of a horizontal cross section of the iris, it demonstrated that the dark and black spots on the iris are caused by degenerative processes that have their origin in the minute nerve filaments distributed towards the iris; this will mean that there we have a morbid anatomy condition that calls for regeneration from the nerve fibre side - this generally occurs if the nucleus is not destroyed.

In associating different portions of the iris with different portions of the body we are really tracing parts of the body. Any impression made on the optic nerve may produce a voluntary or reflex movement of muscles in any portion of the body; similarly, changes that are taking place in the different parts of the body any originate and send up impulses toward the eye - these impulses being carried by the sympathetic nerves to the other nerves that supply the eye. The reason why the iris is of great importance in this connection than any other part of the body, is, because the iris is the only part of the body where we can see distinctly the effects and results of the terminal nerve fibre connections. One of the best proofs of this is to be found in the daily examinations of the patient's eyes during the process of recuperation from some exhausting or wasting disease - for example, the pathology of the white lines in the eye represent a thickening of the nerve filament; the explanation of this is to be found in the increased action of the nerve fibres when this increased activity is brought under control the thickening disappears, and the nerve fibre returns to the normal. An illustration is found in albumenuria, retinitis or diabetes iritis, or in the developed density of the lens in diameter. In all these conditions where lens and retina are involved, the iris is always involved. All inflammatory processes

are associated with iritis.

From this standpoint the eye may be regarded as a field for representation of body condition. This is most important in those cases where symptomatic conditions cannot be found otherwise - for example, in children or in deaf people, and in those who are not responsive to diagnostic stimulation - it is a help to trace out conditions without asking direct questions. If we can get some items in the history of the case then the examination of the eye can often explain the extent to which these conditions have developed - for example, morbid deposits in the eye (iris) may indicate those organs that by predisposition are weak.

Pigmentary conditions are also of importance in connection with the iris; the excessive pigmentation indicates in the eye, as well as in the body, a deficiency of resisting power. A person with light eyes will stand more than one with dark eyes. The darker the pigmentation the less the resisting power. In the Latin and Spanish races the children are born with blue eyes the pigmentation is a secondary condition, developed after birth.

Another point is, the iris is one of the most susceptible of all points of the body to poisons - for example, in lead poisoning there is a peculiar action on the intestinal tract. Mercurial poisons affect the skin, the brain and the superficial lymph glands; by watching the changes that take place in the eye in the attempt to eliminate drug substances from the nervous system, elimination takes place very slowly, and as the elimination takes place the nervous system reasserts itself.

Now we come to discuss the examination of the eye by the use of the ophthalmoscope. Normally the structure of the eye is dark (in the sense of the absence of light,) consequently the fundus of the eye cannot be seen by the normal eye of the observer, because -

- 1- When the light enters the eye it is thrown back towards the point of original reflection.
- 2- On account of the absence of reflection within the eye, due to the presence of pigmentation in the fundus of the eye, and the greater the pigmentation the more difficult it is to examine the eye. The main point then in the examination of the eye is to catch (metaphorically) the light as it is returning from the inner part of the eye. A simple method of doing this is to hold a hollow tube in connection with the flame of a candle, and then look through the tube right into the eye; there you can get the reflected light thrown where you can see it. You keep the light around about from getting in by means of the tube.

Another method is to have a small mirror with a hole in the center of it - reflect the light into the pupil

of the eye through the small hole in the mirror that will throw out the reflexed light from the fundus into illumination in connection with the mirror. That is the old simple ophthalmoscope.

The modern ophthalmoscope differs from the old ophthalmoscope in one particular only - the old ophthalmoscope was a reflecting instrument; the modern ophthalmoscope is a refracting instrument. The ophthalmoscope consists of a revolving disk around the peripheral of which we find a series of lenses of different degrees of strength, these lenses lying back of a small opening in a concave mirror. The technique of the use of the ophthalmoscope may be best described by dividing the methods of its use into four types.

1- A strong lens is turned behind the opening for example, a typical illustration is a 16D. Then there is what is called an Argand burner placed on a lever with the eye of the patient on the same side of the head; the shadow of that burner falls on the tip of the nose. Standing at a distance from the patient, move gradually toward the patient on the same side as the light is placed, reflecting the light into the eye, and looking through the ophthalmoscopic opening with the eye corresponding to the eye observed in the patient.

This method is used in the examination of the cornea the lens, and the anterior portion of the vitreous humor, because this throws these parts of the eye into luminosity in connection with a magnified picture.

2- Take the ophthalmoscope and allow the aperture to be free from any lens. At a distance of 14 inches from the eye of the patient, reflect the light into the eye - this is a method of examining the pupil of the eye, because the pupil in this case is thrown into luminosity. It is also used in examining the eye where there are opaque conditions of the cornea, of the lens or of the vitreous humor, these opacities being thrown, shadowed or reflexed on the pupil in the form of dark spots. When you discover there is opacity then you require to make a more minute examination to determine the nature and extent of it. This is done by moving the eye of the examiner so that the opacity lies in line with the lower margin of the pupil; when the eye of the patient is turned upward; the opacity, if it lies behind the pupil, it will disappear back of the iris; if it lies in front of the pupil it will appear to move upward from the margin of the pupil.

In examination of the vitreous humor the chief point is to distinguish between fixed or moving opacity in connection with the movements of the eye, particularly when the eye is moved outward. These opacities in the vitreous humor are examined by the use of the convex lens in the ophthalmoscope.

3- The method of direct examination used in the examination of the fundus of the eye-

The patient and the light are in the same position as in No. 2. The upper margin of the ophthalmoscope is placed on the supra orbital ridge of the person examining while the chin is held down; light is then thrown by reflection into the eye of the patient so as to be reflected on the pupil, the person examining the eye coming as close as possible to the eye of the patient (closer than 12 or 14 inches, as previously mentioned;) if the accommodation is relaxed on attempting to look at a distance with both eyes, then the fundus of the eye will be thrown out prominently so that it can be examined by the observer using the ophthalmoscope as before. In this case you get what is called an erect image (erect because not inverted). This erect image will be very much magnified, and that will make it possible to make a thorough examination of the fundus of the eye, the magnification may be from 14 to 20 times the normal size.

4- The indirect method in which we have not the erect image, but the inverted image. In this case the light is thrown (reflected) into the eye from the ophthalmoscope about 30 inches from the eye with a 14 or 5 D lens before the opening; with the other hand of the observer a 16 D lens is used about 4 inches from the eye of the patient for oblique illumination; the result will be the formation of an inverted image between the object, the lens and the ophthalmoscope. In this case the inverted image is less magnified than in the previous case where we get the erect image.

A common method of use in connection with the examination of the eye is No. 3 - the erect image method, or the direct method. The principal object of using the ophthalmoscope is to view the posterior part of the internal surface of the eyeball.

Now, opticians, oculists and medicine men in general say that it is necessary in this examination of the eye to get mydriatic effect by use of those so called "Drops" they put into the eye; the two principal things that are used are -

Homotropin - 2% or 3% solution,

Euphthalmin - 5% solution.

That of course dilates the eye and is supposed to give steadiness to the eye that is not there normally.

You can get this effect by using distilled water or by Osteopathic treatment, causing the dilation of the eye - dilation so caused in most normal eyes will keep up one half to one hour.

In the examination of the fundus of the eye there are several things to be looked for and located by the visual observation in connection with the optic disk

(the rope - like combination of all the optic fibres into the disk of the eye).

2 - The yellow spot in connection with the eye. The optic disk represents when seen in connection with the ophthalmoscope - a reddish white oval disk found varying in color away from the normal condition of the eye - a small pit or depression with slanting margins at the centre depression and more or less mottled coloring. Around this is a white band varying in its breadth in different eyes: outside of this we find pigmentation also forming a more or less marked ring, the choroidal ring or band.

In connection with the nerve and optic disk we can also locate.

3- The central artery of the retina, branching out in a kind of network of divisions and subdivisions in the different parts of the retina.

4- Following a similar path to the arteries you can trace out the various veins, darker in color and generally throwing more or less of a shadow on the arterial side, and that is a diagnostic point of the lack of elasticity.

5- Note particularly in examining the eye-

a- Color of the different parts of the disk, the arteries, veins, etc.

b- The presence or absence of enlargement in connection with a disk shown principally by irregularity of shape, - if the disk is uniform in shape there is no enlargement or swelling.

c- The presence or absence of depressions marked by the presence of sharp ridges around and above the depressions over which the blood vessels pass in tortuous form - for example, this is what you find in what is called cupped disk or glaucoma - instead of a uniform disk you have a depression, great tortuosity, a thick blood vessel in the top, then below an uneven distribution of the blood. Glaucoma is a structural change in the blood; if we can cure the blood condition we can cure the glaucoma; it is simply a tortuosity of the blood.

6- The Macula is the most difficult point to examine in connection with the eye, particularly when the pupil is small. The most marked characteristic is an intensity of coloring, the color being deeper than at any other point in connection with the fundus.

We also find at the centre, located in the layer represented by the nerve fibre distribution - that is to say, the inner retinal layer, and the retinal pigment represents the outer layer, the choroidal vessels lying in the choroidal pigment.

We also find at the centre of this macula a small pit or depression, representing the fovea centralia. This is the point that requires particularly to be examined, because this is important, as it represents,

the central as distinguished from the peripheral vision.
 7- In the examination the vessels of the retina should be closely inspected, particularly in their radiation across the fundus, noting changes in color- dark as compared with bright. Also noting the tortuous conditions indicating the minute obstruction or some vaso motor disturbance of some kind.

8- The general condition of the fundus depends on the extent of pigmentation that is present, and this should be compared in all cases with the individual complexion, which corresponds, if the retinal pigment is very plentiful, then behind the retinal vessels we find a very dark background.

If the pigment on the other hand is scanty, then the choroidal vessels stand out in contrast with the choroidal pigmentation - dark compared with the light, etc. - contrast in coloring etc.

9 - In the examination of the retinal vessels remember that these vessels are located in the layer represented by the nerve fibre distribution - that is to say, the inner retinal layer, and the retinal pigment represents the outer layer - the choroidal vessels lying in the choroidal pigment.

Now the value of this is that you can determine the depth of the degenerative change by comparing the portion of the field through which it extends, whether through the inner layer or through the inner and outer layers, etc. That is the means you have of determining the extent of the degenerative process.

In examining into the depths of the lesion, make an objective examination in all directions.

Blood lesions are found in minute specks and the depth may vary- may extend over the inner, or the outer or both parts of the layer.

Extravasation - appearing to the visual observation in the form of large blotches; or there may be large darkened areas represented by blood lesion - this latter case representing absorption and stasis where the absorption takes place.

White patches - represent, if the patch is thin an exudation - if the patch is thick, exudation followed by degeneration, or there may be a white patch representing the exposure of a part of the scleral membrane.

Black spots, or patches represents a deposit of pigment found either in the retinal or choroidal layers.

10 - In order to test the rigidity of the eyeball, and its tenseness - with the patient in the sitting posture make the patient look downward toward the floor or ground, then insert the finger or fingers and thumb under the upper margin of the orbit of the eye, applying gentle pressure from above down, on the eyeball through the eyelid from above downward, gradually increasing the pressure

until you find whether there is not elastic reaction: then apply pressure between the two fingers, or between the finger and thumb, either up or down or laterally over the eyeball from canthus, or from the area represented by the upper lid to the area represented by the lower lid - and see whether the eyeball is simply rigid and resists all pressure, or whether it is just like a ball and jumps back and comes again to the fingers. The normal eyeball is elastic. Note whether the patient complains of pain: pain is an index of rigidity and tenseness - for example exophthalmic goitre, or the protruding eye due to more or less localized dilation.

The variations in tension are indicated by oculists or opticians in three scales from normal - the capital letter T represents the normal: T plus 1 means harder than normal - T plus 2, increased hardness: T plus 3 indicates intense hardness up to the point of strong rigidity. Then the decrease in tension is marked with a minus sign - as T minus 1, T minus 2, T minus 3.

T minus 3 softens to the point of pitting - that is an eye so soft that you can pinch the fingers in it and it will pit like dropsy in the lower limbs - the eye would be quite flat and very soft - it would sink under pressure.

II - In the test of the vision there are several points to be attended to or what is sometimes called by the opticians the form of vision (form vs. no form.)

The important point in this test is the test of central vision. Central vision is direct and deals with static objects principally.

In the test of central vision the method used is the latter method. The principle point is to find out the smallest letters (type) which the individual can read. These letters are made on cardboard in lines the construction of the lines of letters on the cardboard is based on the principle that with the average normal vision the individual should be able to read clearly a letter at any given distance, providing the letter occupies its place in the arc of an angle of five points (5") - the apex of this ideal angle terminates in the eye of the patient: that is, beginning at the eye of the patient. Two lines diverge from the eye, the angle formed between the two lines being five (5") points. The letters according to their sizes fit in between these two lines, the variations in size being found at different distances - for example, take the letter A the angle being the same in connection with the eye - the divergence of the lines increases as it goes out to the most distant point of vision represents the angle. In the normal eye the angle is always invariable -

variations from normal are worked out on a scale of the size of the lettering. Although the letters in this are vary in size this variation is not essential variation, because the form sense gives the same size of an image on the retina, no matter what the size of the letter may be in the arc: in the eye the letter A represents the same, no matter at what part of the angle you get it.

Snellen's card is used by the oculist. The letters and the lines are all worked out on that principle of angles and distance: the line is numbered according to the letter (size) the size or position of the letter in relation to the diverging lines of the angle.

In testing the vision test each eye separately - darken one eye while testing the other (binocular vision) Have the patient at a distance of 20 feet or 6 meters away from the card: place the patient in a position where there is good light, and the light will fall not on the patient but on the card. If these conditions are as stated the smallest letter on the card should be read easily and clearly. The number that is placed over these letters indicates the distance in feet which the letters should read.

The vision is then recorded by placing the distance 20 as the numerator of a fraction and the number on the card corresponding with the letters that can be read easily at that distance as the denominator of that fraction.

If the vision is too weak to be tested by the letter card, another method that is used is the finger count method - with the patient at the same distance and the fingers are put up with variation in movement. See whether the patient can see the fingers or the movement of the fingers. If the patient cannot see anything at all the vision is put down as 0.

Another method of testing the vision is by light, the variation and intensity of light, for example, vision equals perception of light, e.g. V equals P.L. 8 candle power, if tested by candle light. If other means of illumination is used the P.L. is followed by whatever you have as a test. The value of this is principally in noting the progress. Opticians have a board with different lights of various candle power Test from day to day and note the increase in the acuteness of the vision, that is the principle value of this method.

In testing for near vision there is a card made up on the same principle as the other, with its varying series of type. The record is made in this case the same as in the other, except instead of distance of twenty feet, the test is made at a distance of fourteen inches: otherwise the test is the same and the method of putting down the same.

From the standpoint of testing the acuteness of vision; accommodation represents the power of the eye to modify the refractive condition of the dioptric media found in the eye itself. Now you will see that this differs from the view of accommodation from the physical standpoint which represents the modification that takes place in the muscles, where as from the dioptric standpoint we have the power to change the media. The power of changing the accommodation depends on the action of the ciliary muscle, when this muscle is contracted there is resultant relaxation of the tension in connection with the suspensory ligament of the lens, the final result being that the lens become more convex as account of the change in elasticity.

This change in the convexity takes place in the superior or the anterior surface allowing the light that is reflected from a near object into the eye to focus on the retina.

In testing accommodation from the standpoint of acuteness of vision, find out the point nearest the eye of which the eye can see the type on the card clearly: that is using the type card for near vision: test the accommodation in relation to the variation from 14 inches which is the standard for distance of nearsightedness. You could do the same thing by using the 20 feet distance - place the individual just as you would the normal, from the cardboard hanging up, and make the patient walk up towards the card to the point where there is clear vision. You get a better test, however by using the near card, because that does not cause any muscular variation of the eye, as in walking: the excitation of the peripheral vision in walking would alter the acuteness of vision in the field of vision.

12- In the Field of Vision - the definite area representing distinct vision around an object looked at, is called in optics "The Field of Vision" - this represents the peripheral or indirect vision. The object is supposed to be in fixation, and the eye is also supposed to be in fixation. The angular distances at which an object can be seen from its various sides represents the physical limits of the field of fixed vision - the eye does not revolve about in this case. It would be quite different: you would get both central and peripheral vision. The limitation of this field may be determined as follows:

a - From the temporal side of the eye, about an angle of 95 degrees.

b - From the nasal side of the eye, an angle of 65 degrees.

c - Superior (upward) also an angle of 65 degrees.

d - Inferior (below) angle of 20 degrees.

In testing the field of vision always have the eye covered: do not have it closed, as the tension will interfere with the other eye. Make the patient look fixedly at the eye of the observer on the opposite side at a distance of about 14 inches. While this

fixation of vision continues move some object about the field of the eye, 12 inches or so away, and make a rough observation at what angle the object can be seen.

Another method of testing is this - place the patient in front of a blackboard, and trace out with chalk on a blackboard the field of vision while the eye is fixed on a point directly in front of the eye. Most opticians test by means of a blackened surface with a bright spot in the center (electric light): the patient keeps up the fixation of the eye on the bright object while tracing out the limits

In order to get the exact measurements of the field of vision we require to use an instrument which is called a perimeter. This consists of a chin supporter for the patient and a semi-circular metal arc with a radius of about 12 or 14 inches: the arc is so fixed that when the head of the patient resting on the chin support is at rest the eye occupies the center of the arc directly in front of the eye and on the same level as the eye itself. When the arc is revolving some bright object is passed away from the central point on which fixation of vision takes place so as to test the entire field of vision.

In testing the field of vision with the use of the perimeter -

1- Each eye is tested separately, giving us the monocular field of vision for each eye.

If we want to get the binocular field then we have to combine the two monocular to get a uniform binocular.

If the field of vision is not the same in both eyes, there is an effort to convert the field of monocular into the binocular field, there is a physical judgment as a resultant of the binocular vision, but it is a purely physical condition.

2- We must carefully examine the concentric contraction in the field of vision.

Supposing you have a circular representing the monocular vision of the eye, then in the other eye you have another. Can you lay one within the other? Does it constitute a concentric circle or is it something else? The concentricity of the two fields of vision will represent variation in either eye you are representing that would determine whether you have a smaller eyeglass for your eyes or larger: Sometimes large lens are necessary - you must have the proper monocular field of vision.

3- We must note any irregularities in connection with the concentric contraction, and note which eye gives the variation.

4 - Note particularly breaks in the concentricity of the field of vision. These are sometimes called Scotomata (isolated breaks or defects) a technical term in optics. It is an individual defect, and may be found at any point in the circle of the field of vision.

If the vision is entirely absent in any of these defective points, then the scotoma is absolute; if the vision is simply lessened in acuteness, then the scotoma is relative. This is very important, particularly in testing the action of the various muscles.

Supposing we get the field of concentric vision - divide the eye into axes and find what muscles determine this particular part of the circle of vision; in that way you can test absolutely which are the particular muscles involved in that defect.

You must correct the defect by lenses, and it is very important to correct the condition Osteopathically

Of one half of the field is defective, then it is what is technically called Hemianopia; this indicates always some form of localized lesion in the eye, or some obstructive condition in the optic chiasm, preventing coordination, or a defect in the cortical centre of vision of the occipital lobe. Now this is an important point, because ^{it} depends your prognosis of cure or not cure; if you have the occipital lobe lesion it is incurable and this is the only way to tell it, by examination and the concentricity of the field of vision, and determining whether present or absent.

3. In testing the sense of color, in relation to the eye, we have to deal with a condition that is either congenital or acquired -- in the latter case it involves always simply the field of central vision - that is, it does not affect at all the peripheral vision. The general rough test to determine whether it involves the central or peripheral vision would be quite simple -

Take a flower of any color, place in fixation, and make the eye look at the flower, then set the flower in motion to excite peripheral vision; make the patient observe any variation in color at rest and in motion; essential in railroad brakemen and engineers. A man is rejected if he fails in peripheral vision, even if perfect in central vision.

In testing the general color sense, it is generally done by what is called "Holmgren's test" that is to say, different colored skeins of wool are used for testing the vision. First a red specimen is laid at rest - for example, on a table, the patient is asked to pick out a mass of wool that of different colors those colors that are near or that resemble the red color; in that way they may pick out --

for example - blue and call it red. Red is used because it is the lowest color in the spectroscope. Color is a more or less psychic condition - they may not know what the color is because they have never been taught.

The most of the tests at the present time are made according Thomsen's tests by the use of lanterns with colored lights. The different colors are not seen so far away from the point of fixed vision as the white color.

The meaning of this is, that the field of color vision is considerably smaller than the field of light vision (light used in the physical sense of term). One important point to note here is that the color field differs from the spectroscopic view of colors for example, the color that has the smallest field of vision is green, next to that is red, and a little larger than red is blue, and the largest field is white. ascending on the scale you get green, red, blue and white as the field of color vision, and that is laid the foundation for the railroad system. Generally the law lays down the color used, and the distance of color from the ground, and curves so that they may be perceptible to the eyes of trainmen as the train is moving on.

4. We require to test the light sense of the eye, which represents the capacity of the eye to perceive and appreciate the intensity of light - this applies to luminosity or variation in the degree of illumination.

When the white traveler went first to the Rocky Mountains, the Indians tried to shoot the artist who tried to paint the sunset of the Rockies. This was because the Indians were sun worshipers, and their reverence was such that they would not allow it to be reproduced. They show their appreciation of luminosity.

The test for this light sense is made by an instrument called the Photometer, made so as to grade itself the variation in intensity of light. the principal cause of variation in perception of light is due to retinitis, acute or chronic.

5. In testing the muscular power, it is done principally by testing the field of vision and the capacity of the eye to cover the field of vision. In other words, stand in front of the patient and move the fingers around in all possible directions, and make the eye of the patient follow these movements noting particularly any limitations in the power of the eye to follow.

In making this test it is well to make the double test -- that is, test the ability of the eye to follow the movement slowly, and secondly to follow the movement of the finger rapidly. In the last you test particularly the power of coordination among the muscular activities.

If the eye is normal there ought to be no variation in the circle of the field of vision, if there is any variation, then that indicates some form of strabismus.

A third method should be used to test the muscular capacity of the eye. The first was the slow movement the next, the rapid movement, the third -- covering one eye make the patient fix the other eye on the object of vision there should be no diviation in the covered eye. This is indicated by the absence of movement in the eye when it is uncovered. In other words, if you cover the eye and fix the uncovered eye on an object, and then take off the cover from the covered eye, if that covered eye requires to move to accommodate itself that is an indication that the two eyes are not normally coordinated. Both eyes, in other words, should have the same fixation on the same object, whether both eyes are covered or not. If this fixation is normal, then the two images that are formed in the two eyes fuse in connection with what is called binocular vision, if both eyes do not fix upon the same object, then we have double images, or double binocular vision. This is technically spoken of as Diplopia.

6. In testing the eyes for refraction we require the different forms of lens and prisms arranged in convenient form for use - in other words, an eye test case, divided into two sections, and it is no trouble in its application.

A lens represents a crystal form in which we find at least one curved surface. The lens has the power of refracting the rays of light - that is, producing a change in the direction of the pencils or rays of light technically called "ray diviation." The point, however, is that the diviation of the rays of light is the sum total of the diviation of pencils, and therein lies the secret of grinding the crystals or glass so as to suit the particular form of the eye.

This change represents the change in the direction of the ray, and secondarily, in its focus.

A Prism - represents a wedge shaped crystal, the different surfaces of the prism being arranged so as to curve the pencils of the rays of light toward the

base (base in connection with the prism). Prisms may be used;

a- According to the angle of the two sides.

b- By the anterior angular deviation of the ray of light picked up and refracted by the prism. In other words, the different surfaces will take the ray and separate it into its pencils and then refract the particular pencils that are separated into their particular directions.

c- Deviations in directions are measured by the 100 parts of a given arc; this particular arc being taken as the standard of measurement in connection with the use of the prism.

Prism, then, represents a crystal used for receiving the rays of light, breaking them up into their constituent parts and giving the separate elements a particular direction; also a particular focus within the eye. The prism is really the physical apparatus to reconstruct light on a different not as nature made it, but in a different form to suit the eye -- it really represents the most delicate and minute part of the field of optics in the field of correction of vision.

THE SPHERICAL CONVEX LENS is generally biconvex and converges the rays of light towards one particular focus (concentrates like a magnifying glass).

When the entering rays are parallel, the distance from the optical centre of the lens to the focus is called the Principal Focal Distance. The more convex the lens, the shorter is this focal distance, and vice versa.

THE CONVEX CYLINDRICAL LENS represents a section cut in one single plain from a solid cylinder parallel to the axis of the cylinder. In this case the one surface is plain, the other convex, and the other meridians at right angles is a straight line.

In determining the focus we use a meridian of the largest curvature, the focus in this case being a line, not a point, that is due to the combination of the convex cylindrical lens.

The Concave Spherical Lens is generally biconcave, and its effect of the rays of light is to produce divergence without any focus; in other words it separates the rays of light, taking them away from the focal point.

The focal distance in this case is determined by following the divergent rays backward until they meet, then the same principle will be applied as in the case of the convex spherical lens.

IN THE CONCAVE CYLINDRICAL LENS we have a lens corresponding with the convex cylindrical lens, except

that we find one meridian lens which is concave, instead of the convex meridian. Now that gives us the physical explanation of all of the different types of lenses and prisms that are used in the examination, or the fitting and the accommodating of the crystal or glass to the eye. From the optical side (side of the optician) lenses are always known by certain numbers, and there are two methods or systems that are used in this process of enumeration.

1st What is called the Dipter Method; here the metrical system is the scale of measurement and the unit of focal distance is represented by a lens having a focal distance of one meter. A lens with one half the focal distance will be designated 2- D- a lens with one third of the focal distance as 3 D etc. In other words D represents dipter distance, and the unit is the single meter focal. The second method is the regular inch method. According to this method the strength of the lens is marked by the inverse of the focal distance -- for example, a lens that is numbered $1/20$ would represent a lens whose focal distance is 20 inches; $1/30$ would represent a lens whose focal distance is 30 inches, etc. There is no letter to indicate anything in this field, but the enumeration and the denominator of the fraction. In changing the one system into the other, this could be done roughly by dividing the number of the lens into 40; for example, the 2 D lens of the dioptric scale will represent 20 inches or $1/20$ on the other scale; plus or minus, as we said before, represents the convex and concave, plus, the convex and minus the concave. This gives us all the physical principles applied; in using the lens as a test;

- a- First test the vision as indicated under No. 1-- if we find the vision 20/20 (distance in relation to the number on the card) then the eye is emmetropic or normal. This, however, does not indicate that the vision is normal in all cases, because a vision that is 20/20 may be hypermetropic Hence
- b- Place a convex spherical lens before the eye -- pick out one that is very low in the scale -- and if the vision still remains at 20-20 the eye is hypermetropic. Then --
- c- Test the eye with a convex spherical upward in the scale until you get the strongest lens the eye will accept -- accept it a technical expression used by opticians -- to suit the eye.

If in testing the convex spherical lenses in the ascending scale, no positive lens is accepted by the eye, then the eye is practically emmetropic, the hypermetropia existing being so minute that it cannot be corrected.

d- If in testing the vision by the method No1 the eye does not show 20/20 then the eye is either --

- 1st Myopic or
- 2nd Astigmatic or
- 3rd Very markedly hypermetropic, meaning what you might call an acquired hypermetropia on the top of the congenital hypermetropia -- some writers speak of this condition as "high" Markedly is Dr. Littlejohn's preference.

In this case this applies to the whole of the sections. The spherical concave lenses should be used to test. If the vision is changed to the normal by the use of these lenses then the weakest concave lens represents the degree of myopia.

If the concave spherical lens does not perfect the vision, then the convex and the concave cylinders must be used to test, varying the lens at all points of the axes, until the vision is perfected - that is, you would get the test of 20/20 or normal. If the vision is improved by the cylinders, this is an index of astigmatism, and the degree is measured by the variation in the convexity and the concavity of the cylinders used.

7. In testing the eyes by the ophthalmoscope, use the direct method. In the use of the ophthalmoscope medical oculists relax accommodation by the use of mydiatics (opthalmin) etc. from the otopathic standpoint accommodation can be relaxed by treatment in the upper dorsal region. In the use of the ophthalmoscope --

- a- Hypermetropia is measured by the strongest convex lens in the ophthalmoscope through which the fundus of the eye can be seen with clearness.
- b- Myopia is measured by the weakest concave lens through which the fundus of the eye can be seen with perfect clearness.
- c- Astigmatism is detected by the mottled or striped appearance of the fundus when seen through the ophthalmoscope.
- d- In testing the meridians of the eye it is of importance in connection with myopia and hypermetropia. Each meridian can be measured by focusing the ophthalmoscope on the retinal vessels, and looking at the fundus in that focus.

8. The test of the eye by the retinoscope. The retinoscope represents a circular plane or concave mirror,

having a small aperture in the centre of it. Place the light behind the patient and stand about one and one half meters in front of the patient, so that the light can be reflected into the eye of the patient.

In this case the pupil of the patient's eye will give a red reflex. Then move the light which is behind the patient from side to side slowly -- this will cause the red pupil reflex to move either in the same direction as the light or in the opposite direction.

- a When the reflex or its shadow moves in the same direction, if the retinoscope tested is a plane, the eye is hypermetropic.
- b If the reflex or its shadow moves in the opposite direction, when the retinoscope is a plane, the eye is myopic.
- c These two points (a and b) are reversed if the retinoscope has a concave mirror.

In correcting the vision, place the lens before the patient's eye so as to correct the vision when there is no movement of the light.

- d In astigmatism the meridian can be measured separately in the same way, and this is the most perfect method of testing astigmatism, because it represents the shadow. The ophthalmoscope is sometimes used in astigmatism as a means of testing variation of curvature of the cornea -- this gives almost a perfect test.
- e In testing for hypermetropia - if the vision is tested at a distance, vision will be found perfect unless the accommodation is lost, but the patient will see as well with the convex lens as with the naked eye; therefore the strongest convex lens through which the patient can see as well as with the naked eye, will measure the apparent hypermetropia.

In measuring the total hypermetropia, medical oculists use homotropin 2% solution dropped into the eye three or four times just before testing. This produces a temporary paralysis of accommodation, so that vision falls down below normal, because accommodation cannot be used to focus on the retina. The convex lenses used under these circumstances so as to give perfect vision measures what is called the total hypermetropia, representing the perfect refraction of the eye. The difference between the apparent and the total hypermetropia is called "latent hypermetropia"

In the presbyopic or senile condition there is no latent hypermetropia - for example, if the patient has perfect vision in each eye (20/20), but sees with the 2 D spherical lens, there is an apparent hypermetropia represented by 2 D. When the accommodation is paralyzed, the

vision may be changed from 20/20, normal to 20/70. If normal vision is then restored by 3 D spherical lens, the total hypermetropia is 1 D or means, that the patient needs a 1 D glass, you having to correct the latent and not the apparent hypermetropia; you are not correcting the congenital but the acquired hypermetropia.

We do not yet know how to produce paralysis of all the ocular muscles. Homotropin is preferable to atropin, as it can be used in half an hour by dropping in several times.

- f In testing for myopia distant vision is markedly reduced, while the vision is perfect at a near point. The concave spherical lens will change the distant vision to normal, unless there is some other deficiency in vision that is not myopic. The weakest concave lens that will produce perfect vision (20/20), is the measure of the degree of myopia.

In the general myopia there is no necessity for using anything to dilate the eye, or paralyze accommodation unless the myopia is very marked; if it is very marked, then the same measure as in hypermetropia are to be used -- homotropin, etc, to paralyze the accommodation and test in that way.

- g In astigmatism there is a variation in refractive power of the different meridians; this is generally associated with some modification in the anterior surface of the cornea, sometimes also in connection with the lens. In some cases we find irregularities on the surface of the cornea, producing what is called irregular astigmatism.

In the regular type of astigmatism the extreme curvatures appear at right angles to one another. The astigmatism axis and the axis of the cylindrical lens which corrects the astigmatism, represent the axis which is the meridian nearest to the emmetropic. In astigmatism there is no single point of focus, but there are two, the one focus in front and the other, behind of the first, and each focus represents a line rather than a point, the two focal lines being at right angles to each other. The rays coming in from the two extreme positions of the object meet at the focal point. When astigmatism exists instead of there being a focal point represented in the vision, it is represented by a line.

If you divide the line into little points each line will represent an angle. Astigmatism is multiple focusing in a line with another line that runs at right angles; it is really a double system of focusing and that is why astigmatism is so straining on the muscular system, because when trying to keep accommodation you have an

intense strain on the eye which will cause headache, and many other things represented in different ways.

Irregular astigmatism is a double system of multiple focusing, and the multiplication of the object at several different points.

h In testing vision, both for near and distant vision, we require to take account of the degree of astigmatism.

Cylindrical lenses with proper axis will tend to bring the vision towards normal when the cylindrical is normal, then find out the total hypermetropia and myopia, as in a case of hypermetropia - you get the difference between the two, and get the latent for the correction of the vision.

An additional test is used with a card having lines radiating in all directions from one common centre. The astigmatic eye does not see all the lines equally distinctly cylindrical lenses are then used at different axes until all the lines on the card appear equally distinct; then use the weakest cylindrical lens that will produce equal distinctness in those lines as the lens as the lens that is to correct the astigmatism; the weakest lens that will equalize all the lines on the card. In case of multiple astigmatism, combine lenses of different axes.

9- PRESBYOPIA Here we have an old age or senile eye, in which about 45 or 50 years of age there is a gradual loss in the power of accommodation until in the typically presbyopic eye accommodation is entirely lost.

Now that is a point that should be looked into very carefully, and tests should be made every year to keep pace with the change of accommodation. The use of a glass that will suit forty five will tend to destroy vision at fifty five or sixty, because it is not the glass that will correct the vision of the eye at that age. Astigmatism should also be tested occasionally to find any change in the astigmatism; if there is any change in the astigmatism there ought to be a variation of the lens to suit the changed condition of the eye. That is mechanical osteopathic treatment- should be once a year, and sometimes oftener when the substance in the eye changes with the body takes place more rapidly.

The near point of monocular vision in the child is about 8 and one half inches; this near point is gradually receding until in old age the nearest near point of vision is about 15 or 18 inches, representing the average reading distance in an old person.

Now what we mean by this is, that here the child two or three months old will have the 8 1/2 inch near distant vision, and gradually that will recede from the eye until you have that variation in old age. That is not taken .

account of sometimes in school children - some school children have near vision almost as in their childhood, and it is wrong to make them read at a distance of 15 or 16 inches; no person up to 40 years of age is able to read at such a distance as that from the eye without injuring the eye. The gradation of distance at which reading should take place should be determined by the individual himself, or else take some optical means of determining and grade accordingly. That is one of the measures that should be taken to preserve the sight, because you put your near point of vision away from the eye, then inducing premature senility of the eye.

When the near point of vision gets beyond 15 or 16 inches, we have a hyper presbyopic condition - for example, supposing an individual of 50 years of age can clearly accommodate the eye at a reading distance of 15 inches from the eye, there is a range of visual accommodation extending from the distance of 1 inches to infinity (from the standpoint of vision, infinity means Horizon).

This will represent a vision graded 3 D. If at the age of 55 the reading distance accommodation point is 30 inches, here the range of vision is from the 30 inch point to infinity, or a 1 25/100 d.

In correction of the vision by the use of a lens, subtract 1 25/100 D from 3, which equals 1 75/100. That is, for example, plus 75/100 D would correct the vision so as to bring the point of reading distance accommodation to 15 inches, and that is the lens you would prescribe for a patient whose eyes are in that condition. Correct the vision of an old person to the 15 standpoint of old age, not to the 2 1-2 inch.

10. Insufficient motile action of the muscles of the eye, and of the eye itself. In this case, some of the muscles lose their tension, so that they are not able to maintain the normal equilibrium of the eye in movement. There are quite a number of types of this condition - example;

HETROPHONIA here there is an imperfect balance of movement
1 in the eye.

EXOPHORIA represents the tendency of the eye to fall out
this is caused by the inefficient action of the
the internal recti muscles.

ESOPHORIA is the tendency of the eye to fall in. "Fall out
a and fall in" correspond with conditions represented by divergence and convergence that we mentioned before. In esophoria this is due to the insufficient action of the external recti muscles.

HYPERPHORIA represents the tendency of the eye to vary
from normal in a vertical direction, involving
the inferior and superior recti muscles, from
overstimulation of the same muscles.

In testing for these conditions;

1. In heterophoria the best general method of testing is by holding up a red glass before the eyes; this makes the two eyes separate from each other if there is any tendency to heteropia. This is also the test that is or may be, applied to Diplopia (double monocular vision).

2 Vertical Diplopia is best tested by the use of a prism glass about 10 degrees, and holding the base down over the eye, this causes the image of that particular eye to be thrown upward over the image of the eye.

If the muscles that hold the eyes in lateral equilibrium are normal, the upper image will be placed directly above or over the lower image in a vertical line, and this, of course, will be a means of testing the amount of diplopia; the degree of it will be tested by the degree of the prism, and the degree of the prism which corrects will represent the degree of the glass that will be used in correcting the vision.

The amount of exo and esophoria is measured by the use of a prism with a base turned away from the eye (reverse) of the preceding). In this case the upper image will also be case in a vertical line directly over the under image, and you get the same phenomena as in the preceding.

3. In testing the power of abduction and adduction and the degree of its variation from the normal, we use the prism, which is held horizontally over the eye, with the base either in or out. The patient is then asked to fix the eyes on a object at a regular distance, say 20 feet. Horizontal diplopia will be found in this case; instead of upper and under vertical images we will have an image on the same line.

If the prism is weak, the two images will fuse and form one single image, and the weakest prism which produces the fusion of these two images will represent the correction of vision. The strongest prism, with its base towards the eye, which causes the fusion of the two images into ^{one}, will represent the amount of fusion power in connection with the external recti muscles in abduction. The strongest prism with its base away from the eye, which produces the fusion of the two images in the horizontal plane, will be the measure of the power of fusion of the internal recti muscles in adduction. The variation in these two from the weakest of the strongest prism represents.

and 60 degrees the internal recti an adduction. Of course that will vary in different individuals 6-7-8-9-10) I do not think that you will ever get more than 10, or on the other hand, from the higher figure downward not more than to 27, etc.

The same method is used in elevation and depression of the eye by holding the prism upward or downward instead of horizontally inward or outward. In this case the fusion sends about 2 to 4 degrees of the prism strength. In correcting the vision by the use of prism glasses use a prism about one half the strength of the fusion power that is to say, if you get 8 degrees as the fusion power of the external recti muscles in abduction, your prism glass will be about 4 degrees which will be used to correct the vision of the patient in glasses.

THE ARGYLL ROBERTSON EYE.

This represents the loss of the light reflex without the loss of accommodation reflex. It is found principally in locomotor ataxia, and in general paralysis. Most writers claim that the Argyll Robertson eye is an infallible index of an antecedent syphilis; this however, is not true, because we find the Argyll Robertson eye in progressive muscular atrophy, which has no association with syphilis, lead poisoning, hemiplegia, aortic aneurism, paraplegia, ophthalmoplegia, or nucleus cheroiditis, where there are no syphilitic conditions at all, and where there are no other symptoms of ataxia, present. The Argyll Robertson eye has also been found in diabetes mellitus, and also in carbon disulphid poisoning.

The Argyll Robertson eye varies very much in different cases, this variation found in pupils;

1. In some cases both pupils are small, capable of greater contraction in convergence. There is usually, however, the loss of the dilator reflex under cutaneous stimulation.

2. In other cases pupils are dilated, with loss of contraction by divergence. In this case however the dilatation symptoms and not the contraction symptoms, or the contraction symptom and not the dilator symptom.

Bannty in his work in the nervous system ascribes the Argyll Robertson eye to the involvement of the gray matter in the cervical region, and especially the impairment of the ocella spinal centre function 2. dorsal accessory fibres to the 3 cervical.

Gower on the other hand, claims that the Argyll Robertson eye is associated with the changes in the motor centre of the 3 cranial nerve, also that certain of these nuclear points of origin of the 3 cranial nerve are coordinated, and one is distinctly motor. The point Gower makes here is the centre in connection with the pons which is distinctly motor, along with the loss of light reflex there is frequently.

- a- The loss of accommodation or
- b- The loss of iris activity in the field of accommodation, that is, there is not a total loss of activity but only so far as the iris is concerned (accommodation to distance)

The ocular muscles become weakened; in some cases paralyzed. According to Gower this is explained by and dependent upon regenerative processes in the correlated nuclei - for example,

a In the nuclei of coordination of the 3 cranial nerve - or

b Gower says that frequently some of the other cranial nerves are involved, giving us accessory signs of paralysis of the muscles of mastication, paralysis of the muscles of the larynx or the muscles of the face. That shows, according to Gower, the progressive development of the cause that lies back of the Argyll Robertson eye, traveling from one nucleus to another in form of generative process.

Gower suggests that the primary condition is one of malnutrition, and that develops into an atrophic condition which accounts for the spreading of the trouble.

In these cases the most important lesion is a degenerative process in the sensory neurons of the posterior spinal column, affecting later --

a The posterior peripheral roots including some of the cranial nerves through which degeneration passes.

- b To the pons
- c To the cerebellum
- d To the medulla
- e To the cerebrum

The degeneration of the peripheral ocular neurons which has its cell body in the retina, and its ramifications in the external geniculate body seems to be secondary to the spinal degeneration, but primary in connection with the diseased condition of the optic nerves.

This represents the old theory that tabes dorsalis is primarily spinal, secondarily peripheral or cerebral by spreading in the peripheral nerves or through the cerebro spinal connecting paths. The correct theory, however, is that the primary condition of tabes found in the posterior nerve roots, and hence either at or away from (intra spinal) the ganglion cells in the posterior ganglia are involved. As the disease progresses, the disturbance passes to the sympathetic system, manifesting itself in the visceral and glandular involvements. The question is how does it spread from the cilio spinal region to the cranial nerves either peripheral or nuclear. Now what we said before will explain how it travels to the cilio spinal centre, intra spinal along the column, or

may travel sympathetically until, it reaches the region of the ilio spinal.

The immobility of the pupil of the eye in connection with the light reflex occurs in the toxic stage, and side by side with these we find two changes;

1. Motor coordination secondary to the sensory disturbance.
- 2 The loss of the tendinous reflexes, this takes place through the change in the muscular system, especially in connection with variations in the muscular sense. In the 3 stage of the disease the vegetative or visceral functions are affected.

Some claim that this sets aside the possibility of tracing the ataxic stage through the sympathetic system. The objective, however, is apparent and not real, because the sympathetic system asserts its independent functioning where the sensory system is altered, the visceral functional changes being a reaction later on, from the side of incoordination. That practically means that the early test of the development of the disease consists in the attempt of the sympathetic system to maintain an independent function, and only when it is impossible to do we get the reaction in the 3 stage in the form of the visceral reflex; that is typical practically in all types of diseases. The same would be true of the heart on the sympathetic side; while in history of heart trouble we get stomach trouble, the last symptom to be developed in the visceral side.

The interesting fact is that the Argyll Robertson eye is found in parietic dementia, as well as in tabes in both cases the posterior fibres of the cervical cord, or the intra spinal posterior roots become sclerosed. The degeneration has an upward tendency, along the posterior internal column. Church in his work on nervous diseases explains the fact that the optic nerve is so soon affected by the close connection to the central lobes, the degenerative changes moving upward according to the law of Wallerian degeneration (degeneration in the direction to its impulses). The changes that affect the eye according to this law, would be atrophic change in the medium of the ocular nerves, because, as we found before, it is the motor centers in which the primary degeneration is found. This explains why the iris ciliary involvement is the most common that we find. According to Harris, the small pupils that are found in locomotor ataxia, or in paralysis, cannot be explained as a result of parietic miosis, because the eye never becomes so small in sympathetic paralysis. This point cannot be explained on the basis of continued irritation affecting the nucleus of the 3 nerve. The smallness of the pupil is therefore due

a In part of the hypertonic contraction of the sphincter muscle of the eye, on the theory that the iris has only circular muscle fibres, and no radiating muscle fibres, the 3 nerve being accelerator and the sympathetic nerve being inhibitor to these fibres, a condition the

same as in other parts of the body - a muscular system, and with a nerve supply the same as any other, and the predominant system of the cerebro spinal.

b If the loss of light reaction is unilateral, by testing the other eye it will be found that if we focus the light on the affected eye with the sound eye shaded, the sound eye will contract. This demonstrates that the afferent side of the affected, and also that the Argyll Robertson eye cannot be due to a nuclear lesion, hence the conclusion is that there must be a sclerosis of the nerve fibres, more particularly that as it is associated with sclerosis of the posterior nerve roots, no nuclear lesions being found in these cases. This means that the lesion is peripheral, and is not central. From the osteopathic side it means that it is a curable condition.

In experiments upon the pupil reflex of birds it has been demonstrated that the two nuclei of the 3 nerve are not bound together in the light reflex; that in birds and lower mammals the optic nerves decussate completely at the optic chiasm, so that the posterior decussation in the light reflex takes place between the optic lobes and the nuclei of the 3 nerve. In man, on the other hand, the optic nerves decussate partially at the chiasm, so that there will be partial decussation of the fibres for the light reflex between the anterior corpora quadrigemina and the nuclei of the 3 nerve. In this case, the light reflex will be from the eye to the optic chiasm, thence to the anterior corpora quadrigemina, thence to the nuclei of the 3 nerve, with decussation (a) at the chiasm and (b) between the centres - the anterior corpora quadrigemina and the nuclei of the 3 nerve, afferent paths being from the nuclei of the 3 nerve of the eye. In this way light to either eye will pass through both of the nuclei of the 3 nerve independently. Hence, in the Argyll Robertson eye there is sclerosis, of those fibres on one side or on the two sides. In lieu with this theory Dr. Harris points out that in cases of tabes dorsalis from a pathological standpoint there has been found "considerable atrophy of the plexus of nerve fibres beneath the layer of nerve cells of the anterior corpora quadrigemina."

This in all probability is true, but the fact that Dr. Harris admits hypertonicity and atrophy as the basis of the loss of light reaction seems to us to point in the correction of the second eye reflex, namely, the sympathetic ophthalmic reflex, which undoubtedly is at the basis of the nutrition and tonicity. Osteopathic work has demonstrated that in building up the eye from tonic and nutritive standpoint, it takes place from the cilio spinal region in the spinal cord. Dr. Harris admits that it is most frequently associated with posterior sclerosis, why not then from the cilio spinal

region through the sympathetic ophthalmic reflex, the direct path, especially if there is no nuclear sclerosis?

From this we might argue a twofold connecting pathway

1. Cerebrospinal, along the intraspinal posterior posterior nerve root to the posterior column, thence to the cerebral centres. This may affect the optic nerve and of course will be atrophic.

2. Sympathetic by way of ciliary ganglion and the cavernous plexus, through the cervical ganglia.

In tracing out this connection it is necessary to recall this disease. In both locomotor ataxia and parietic dementia the pupils are narrowly contracted, it is rigid and insensitive, by throwing a narrow ray of light through the pupil, in an oblique direction, upon the optic nerve, there is mydriatic contraction. This is the Wernicke phenomenon of the hemianopic pupil in which the lesion is in the visual cerebral centre, back of the geniculate bodies. New physiology points out that the section or paralysis of the oculi motor gives slight dilation of the pupil, the pupil contracting if the sympathetic is divided or removed. If both the sympathetic and the oculi motor are simultaneously stimulated contractions take place, giving the oculi motor function. Light should cause contraction. This indicates that the Argyll Robertson eye is in a fixed condition, failing to respond to the light stimulus. Why? The eye will still contract when the eye is accommodated for a near object. Contraction of the pupil is an associated movement, and hence the lesion is claimed to exist in these connecting links between the afferent and efferent nerves, centrally, where the oculi motor is connected with the corpora quadrigemina. In this case, then, the lesion would be supposed to exist in the 5 cranial, connected through the corpora quadrigemina, involving the anterior cell group that controls the pupillary and ciliary contractions. Here we could trace the connection of a similar phenomenon in ptosis. This could explain what accommodation is sometimes abnormal also.

This is of importance because contraction of the pupil takes place on a stimulation of the optic nerve, the greater the stimulation the greater the contraction, accommodation being secondary. The contracted muscle is a result of the constriction of the sphincter muscle. Now, the eye is supplied by the short ciliary nerves from the ciliary ganglion, connected by the short root with the oculi motor, by the long root with the ophthalmic branch of the 5 and through the cavernous sympathetic plexus with the cervical sympathetic along the path of

the internal carotid artery. The long ciliary nerves connect the eyeball with the nasal branch of the ophthalmic division of the 5. Thus the reflex of the eye is based (a) on the 2. nerve, afferent, and (b) the 3. nerve, afferent with the centre on the aqueduct floor at the level of the anterior corpora quadrigemina with semi-decussation at the chiasma and the nuclei of the 3. Hence the tonic constrictor centre of the papillary contraction is in the intermediate nuclear part of this center. It is important to remember that the visual sensations are different from the papillary contraction sensations, each of these sensations taking its own pathway along the optic nerve. A constricted pupil indicates in the majority of cases, as Foster says, an activity of the reflex mechanism and a dilated pupil the absence of diminution of activity, hence in the (Argyll-Robertson eye the reflex centre is in such a condition that the stimulation of the optic nerve, by the ordinary light channel, has no effect upon the eye. Now ~~xxx~~ it is a well known fact that if the sympathetic nerve in the cervical region is divided, the pupil becomes constricted, whereas the blood vessels of the head and neck are dilated. The action may be traced down the neck to the 1st dorsal ganglion into the spinal cord along the rami communicantes in connection with the first dorsal nerve in the region of the cilic-spinal centre. From this dilator local centre we must remember that a path can be traced along the spinal cord through the medulla to a centre in the anterior part of the aqueduct almost side by side with the center of constriction for the pupil of the oculomotor. Foster claims that tonic impulses pass from the pupil dilator centre. Hence there will be two pathways from the cilic-spinal center to the pupil: (a) normally the dilating impulses will pass along the cervical sympathetic to the ciliary ganglion and thence along the ciliary nerves; b) over the gasserian ganglion to the ophthalmic branch of the 5, along the nasal branch of the ophthalmic division and along the long ciliary nerve. Thus the short ciliary nerves to the circular muscle of the iris with the ciliary ganglion and the 3. cranial nerve represent constrictor pupil action, and the long ciliary nerves with the gasserian ganglion dilator pupil action. The dilators from the medulla centre and the spinal cord centre pass by the anterior roots of the 1. and 2. dorsal nerves, the rami communicantes, sympathetic chain and cervical ganglion through the gasserian ganglion by way of the ophthalmic branch of the 5, the ciliary ganglion and the long ciliary nerves to the radiating muscles of the iris.

There is another side that must not be overlooked that is, the vasomotor. The 3. dorsal nerve sends out some fibres that pass up through the sympathetic system regulating the blood vessels of the eye. Dilation of the local blood vessels causes the pupil to become

small, and vice versa. The 3. dorsal represents the vaso-constrictor force, and a pressure at this point or along the nerve path, cutting off constrictive influence, results in the dilatation of the minute eye vessels. Thus when the cervical sympathetic is stimulated there is constriction of the iris blood vessels, and the pupil is enlarged; when the cervical sympathetic is divided, there is dilatation of the iris blood vessels and contraction of the pupil, on account of loss of vasoconstrictor impulses through the sympathetics. This indicates that the vasoconstrictor fibres for the iris and the pupil dilator fibres pass from the same point in the spine, the cilio-spinal centre, and follow the same path. These must not be confounded because the long ciliary nerves are pupil dilators, they are not iris vasoconstrictors. When the light falls on the retina the 2. nerve becomes afferent, and the short ciliary nerves efferent, in the constriction of the sphincter muscle, contracting the pupil. In opposition to this, the sympathetic furnishes impulses that reach the sphincter through the long ciliary nerves, lessens the tension between the sphincter and iris, lessening the constriction caused by the light impulse or enlarging the pupil when it is free from light stimuli.

The two opposing mechanisms are, (a) constrictor, 2. afferent, 3. efferent in reflex action; (b) dilator, afferent 2. nerve and any stimulus which can reach the efferent sympathetic, whose action is tonic. The optico-oculi motor mechanism is the light adapting mechanism and hence is the visual apparatus; the sympathetic mechanism is that which represents any other influence upon the pupil, and represents the regular channel for influence from the spine, viscera and even from the brain, as is manifest from the pupil dilating effects of emotion.

From this line of reasoning I would conclude that the Argyll-Robertson eye is associated with the sympathetics as the pathway of pathological impulses, whether the sclerosis is spinal or cerebral, over stimulation amounting to the full inhibition, affecting the pupil so that it is practically rigid against the light impulse.

"The movements of the iris as well as of all other delicate tissues, are under the influence, at least to some extent, of the blood vessels, but not entirely so. The dilator nerves at two points - one right over the superior cervical ganglion, the other at the level of the ciliary nerves. Franck found that above the sup. cervical ganglion two fibres enter the skull through the carotid canal, one of them dilating the pupil when irritated, without influencing the vessels.

"On testing the nerves which pass from the ophthalmic ganglion along the optic nerve, two sets of fibres

are likewise found, mainly contractors, but also some dilators. It can likewise be shown that irritation of the sympathetic nerve produces dilation of the pupil much sooner than muscular contraction, and that the former result does not last as long as the latter.

"Division of the 5, 4. and dorsal communicating rami, of the sympathetic, causes slight momentary dilation of the pupil. The same result is obtained by dividing the first and second rami, as well as the branches passing from the 8., 7., 6. and 5. cervical roots to the 1. thoracic ganglion. This ganglion, therefore, receives dilator fibres coming from the cord in an ascending as well as in an descending direction.

"They ascend thence through the anterior loop of Viussens to the inferior cervical ganglion. The upper thoracic ganglion serves as a tonic centre for the dilator nerves of the pupil. The dilator fibres thence ascend with the cervical sympathetic through the first cervical ganglion, reaching the iris ultimately by way of the gasserian ganglion and ophthalmic branch of the trigeminus. Other dilator fibres exist in the 5. nerve even before it reaches the ganglion, but on cutting these the reflex dilatation of the pupil is not interfered with as long as the filaments derived from the sympathetic are intact.

The contracting fibres exist in the trunk of the 3 nerve passing through the ciliary ganglion into the ciliary nerves. Section of the latter produces a more decided effect than division of the motor oculi, on account of a tonic action of the ganglion."

This is an extract from the "Central Blatt fuer die Medicinische Wissenschaft, 1881, No. 15, which confirms the view already presented indicating the available pathway of impulse and the fact that the spinal centre at the 1. dorsal acts as a tonic centre for the pupil of the eye, at least in connection with the medulla centre. It must be remembered that the iris consists of circular and radiating muscle fibres, the former representing constriction in connection with the oculi motor nerve and the latter dilatation in relation to the sympathetic. In all probability here we have crossed innervation which Von Beach and Feilner have applied to the unstripped muscle, circular and longitudinal, of the intestines. (Feiner Medicinische Jahrbucher 1883). The muscular fibres of the iris are unstriated and the two kinds of fibres will play in antagonism to one another in connection with contraction and relaxation of the iris so that the tonic condition will depend on the antagonistic activity of the two reflexes, the distinctly central and the sympathetic, keeping the

apparatus of the eye in a tonic and nutritive condition.

It is of great importance to keep this clearly in view, on account of the great number of eye affections found as complications of sequelae of diseases. And as the sympathetic life is generally involved in all the diseases, the sympathetic system is by its close connection with the cilio spinal area of the spinal cord on the hand, seems to be the most natural pathway of pathological impulses. In addition to this, the sympathetic and the 3 nerve connection represents the basis of nutrition, the fibres of the 5 being the trophic nerves to the eyeball, in addition to being vasomotor through sympathetic connection.

This is especially valuable from an osteopathic point of view, as the sympathetic system is the most available for manipulative purposes, and for this reason under proper care eye disorders following scarlet fever, measles, smallpox, etc., should be obviated almost entirely. Indeed every osteopath should attend very carefully to the eyes, ears and nose in all cases where toxicity is associated with disease, to prevent complications involving these organs after recovery.

In a recent issue of the Osteopath, published by the Pacific School of Osteopathy, I find the following from the pen of Dr. A. S. Brotherhood;

"Hence it is that the theory and practice of Osteopathy offers an attractive field for scientific inquiry.

The reflexions were suggested by a phenomenon observed in recent diagnosis of a clinic patient.

The right eye had been painfully affected for some time, and had been variously treated.

Pressure upon the cilio spinal center between the 2 and 3 dorsal vertebrae on the right side revealed decided tenderness at that point, and caused severe pain in the diseased eye.

It is not surprising that diseases of the eye should affect the sympathetic nerve and, by that path, the centre known as the cilio spinal. What by that sensory path could the influence of pressure be carried to the eye? We know of none.

From the first two dorsal nerves, which are identical with the cilio spinal centre, sympathetic fibres are distributed to the dilating muscular fibres of the iris, and when stimulated, cause dilation of the pupil.

From the 3 dorsal nerve, fibres are distributed which regulate the calibre of the blood vessels of the eye.

Under the pressure either set of these fibres may be affected. The first may be stimulated, dilating the muscles of the iris so as to press upon the filaments vase constricting function of the other nerve, and by dilating the arterioles cause pressure upon sensitive nerves; or both causes may operate and this induce pain.

The abundant supply of sensory nerves to the ciliary muscle, iris and cornea from the nasal branch of the ophthalmic division of the 5 nerve, and the short ciliary branches from the ciliary ganglion, makes it conceivable that any change of arterial pressure might affect these nerves to the extent of causing pain.

This theory is supported by the fact that on the first examination sharp pain was felt in the eye, and that after several treatments this sensation had given place to one of pressure and fullness.

It seems reasonable to conclude that there was no inflammation, but congestion and partial paralysis of the constrictor nerves.

(Note. The case mentioned is one which has responded to Osteopathic treatment in a wonderful manner. When the eye was examined, it has every appearance of severe inflammation of the conjunctiva. The cornea was opaque, and the patient could not distinguish objects near or far. She had been treated by eye specialists at various times for five years, without success. After the third Osteopathic treatment a decided change for the better was noted, and after a month's treatment she could see to thread a needle, using only the vision of the formerly inflamed eye. ED Pacific Osteopath.)

My attention has been called lately to a case treated here in the city, in which there was total blindness of both eyes when the treatment began, the case being diagnosed and treated as one of loss of nutrition to the optic apparatus. The patient now can see the light and discern objects. During the last few weeks of treatment the patient complained of aching pains passing down from the eyes through the head along the intracapsular region, where they terminated. Does not this indicate that with returning sensation and nutrition, the pain expresses "a prayer for pure blood", and that it passes along the pathway in a backward direction to the centre in the cilio spinal region for such blood supply?

REFERENCES ADDITIONAL TO THOSE MENTIONED

1. The cilio spinal region - Budge and Fuller
- 2- Sympathetic and iris - Diffi, Petit, Tassin, Langley.
3. Irido-dilator nerves - Franc, Langley, Eesse, Gaskell
4. Trophicity Inhibition Stimulation - Waller
5. Optic centres, tracts and nerves - Wenckow, Sherington.

DISEASES OF THE EAR

Among the diseases of the ear that we find, are inflammation, discharges of different types from the ear, injuries of different varieties, tinnitus aurium and deafness.

The lesions found most commonly are the atlas, axis, 3 cervical - sometimes the lower cervical. The most common is the atlas lesion, interfering in some way with the auditory nerve or the posterior nerve distribution toward the cerebellum and medulla.

Another lesion not uncommon is the temporomaxillary articulation in the form of a luxation, interfering with the fibres of the temporal branch of the inferior maxillary division of the 5 cranial nerve.

Other lesions that are found particularly in ear-ache is abscess, are contracted conditions of muscles around and at the angle of the jaw, - over the temporomaxillary articulation, in the sub occipital region, posterior or lateral, or both, in the upper cervical

Among other lesions found is at 7 cervical and 1. dorsal, probably through the vertebral blood circulation, lesions in the lumbar regions, probably through the interference of the cerebro spinal fluid distribution. This latter lesion is found principally in mastoiditis, and mastoid abscess, or other types involving the mastoid process.

This is where you get a very close relation to erysipelas (Quote case diagnosed as erysipelas of feet not usual. The feet were swollen and very red - lumbar region found to be very sensitive. Patient had attack of hysterical mania almost to insanity. After swelling was reduced, he said that he heard peculiar sounds, and he was muttering in return. Here the lumbar lesion extended both to the ear and to the lower extremities - no doubt it was a lesion involving the cerebro spinal fluid - lesion was 1-3 lumbar markedly anterior, and is an obstinate interference in the filum terminale of the cord).

The 5 nerve supplies the external auditory canal in connection with or through the auricle temporal branches, the upper branch sending a sub branch to the tympanum. The Vidian sends some of its branches (nasal) to the membrane in connection with the Eustachian tube, involved particularly in catarrhal conditions. This is the branch chiefly affected in connection with internal throat treatment, particularly where we have secretory types of ear disturbance.

The 5 cranial nerve has three great functions in connection with the ear - secretory, motor and vasomotor. The secretory function is in connection with

the circulation of blood, the lymphatic and cerebro spinal fluid circulation and formation of cerwax, the cerebro spinal fluid connection in the labyrinth of the ear continually bathing the rods. In diseases of the ear and interference of the corti rods is probably an interference of the cerebro spinal fluid.

In ear diseases the 5 nerve is affected similarly to the types of lesions we find in eye diseases; Sometimes the same lesions may affect the eye and ear. The typical lesion in this case is in the upper cervical, affecting the ear either directly through the cerebro spinal nervous system or through the sympathetic nervous system.

Diseases of the ear are frequently associated with or secondary to nasal catarrh or inflammatory conditions of the eye; sometimes through inflammation (congestive) of the nose, throat or head. In these cases the sequential affect on the ear is produced probably -

- a - Through membranous continuity
- b - Through the cerebro spinal fluid or
- c - Through the inequality of distribution of the cerebro spinal nerve impulses.

The medium of the majority of cases is the cerebro spinal fluid. The sympathetic nervous system in relation to the ear represents chiefly the vasoconstrictor fibres and function in connection with and through the cervical sympathetics; in this case lesions in the cervical lesions may affect the ear through the sympathetic system - in this case we are likely to find disturbances of a similar or opposite character in some other part. Lesions in this case are atlas and axis; this means that the type of the sympathetic lesion is either one that involves the sympathetic chain, as it passes into the cranium, or a disturbance involving the superior cervical ganglion.

Blood lesions are found at the atlas and axis - affecting the blood supply through the ear -

- a - Either directly through the medulla or
- b - Vasomotorly in connection with general vasomotor disturbance of the head, or a specific vasomotor, disturbance of the ear, with a lesion in the upper dorsal. These upper dorsal lesions are not so commonly found in connection with the ear as the cervical, but are often in vasomotor types of ear trouble - they extend down to the 3 4 dorsal.

The auditory nerve can best be reached by deep inhibitory pressure at the level and behind the 3 cervical vertebrae, that explains why the 3 cervical is a typical ear lesion.

The auricular branch of the 10 cranial nerve is closely associated with the ear through the connection it has with the cervical sympathetics and also through the branches of the 5th cranial nerve.

The superior cervical ganglion also give connection with the ear through the 9 and 12 cranial nerves, particularly at the upper end of the superior cervical ganglion.

The tympanic nerve branch passes through the cr in connection with the superior cervical ganglion, sending out small fibres of distribution to the mucous lining of the middle ear - the mastoid cells also sends branches in the connection with the plexus of the carotid artery in the carotid canal; that control the vasomotor distribution of blood to the ear. This explains the atlas lesion through the blood supply to the ear.

The facial nerve is directly connected with the auditory and the auricular branch of the 10 cranial nerve - hence, any lesion involving the 5, 7, 8, 9, 10th, and 12th, cranial nerves may result in some type of ear disease;--

- a- Directly through the nerve supply - that is the small fibre distribution from the nerve.
- b- Through the sympathetic connections of these nerves, or
- c- Through the vasomotor control of the blood supply.

In addition to these, the involvement of any sensory nerve, particularly in connection with any muscular sense, may react through interference of the ear, irritation or obstruction to the immediate nerve and blood supply of the ear; this takes in an immensely large field - peripheral, etc.

Diseases of the ear also are frequently associated with brain conditions; this may take place in several ways.

1. By direct absorption from the brain to the ear, or as a reverse, from ear to mastoid to the brain, and the probability is that it is greater from the brain to the ear, because nature always tends to bring to the surface.

2. Through the cerebro spinal fluid. Then we find chiefly ear conditions.

3. In connection with the nuclear origin of the cranial nerves or along some path to these accessory cranial nerves, that is, you have accessory path which connects with the 5, 9, or 12th, cranial nerves.

IN EXAMINING OF THE EAR the main points are to pass the light in such a way, that you can throw reflexions into the ear, just as you in the eye. This is done with a reflecting headband mirror, in the examination

you also require a speculum and a tuning fork, or a watch is sometimes used instead of a tuning fork. Place your patient in a position to throw the light into the ear, then take the speculum in one hand, catch the external auricle in the other hand and insert the speculum. Do not push the speculum in but a little way first. Note this point particularly. Then bend the head to the other side, pulling on the loose part of the ear and pull downward away from the head, then push the speculum in gradually a little farther and keep moving the patient downward by traction on the ear. In this way you can follow the entire canal of the ear.

Examine carefully the color. There is a great variation in color. Sometimes you will find it darkened, sometimes black; sometimes you will find white,

Then you should investigate also for little nodules, elevated points along the lining of the ear, and the only other point that is of importance, is the examination of the tympanic membrane. Note particularly the presence or absence of perforation, exudates sometimes, sometimes you will find what you might almost call sweat the membrane throwing off fluid; in other cases you will find a thickening, reddened condition of the membrane.

In making the physical examination of the ear, always apply pressure over the mastoid process to find out whether there is any effect, any relaxation or contraction of the lining membrane of the ear -- that will point to Eustachian tube condition, which are always associated with conditions of the mastoid process.

Then in examining the ear use the tuning fork or watch to test equality or inequality in the sense of hearing to the two sides. Take the tuning fork, hold it up to the ear and move it gradually away until the patient cannot hear, and then compare on the two sides you will seldom find any one whose ears are exactly alike on both sides.

Some writers on psychology say that it is an animal characteristic, citing the dog placing his ear in a slant direction, because one ear is more acute than the other ear.

Then use the tuning fork over the cranial bones, frontal and temporal bones particularly, and ask your patient to tell the effect or effects by sounding the tuning fork and placing the base end of the fork over the temporal and frontal bones; that is particularly applicable where you have types of partial or completed deafness. In a case of absolute and incurable deafness there will be no sound perceptible under any circumstances. The reason for this is that the internal auditory apparatus is destroyed, at least part of the

labyrinthine apparatus is destroyed, there will be no sound at all.

In using the tuning fork over the mastoid, frontal and temporal bones, you get absolutely no hearing at all, you have a clear case that is incurable; some use the lower jaw, but its principal importance is in relation to the Eustachian tube.

If a case of partial deafness, close the ears, if not, you don't need to. You have transmission of sound down through the ossicles, and then up to the labyrinth; if this is destroyed, or Corti's organs, or there is no fluid, you have an incurable condition.

In dealing with partial deafness, note first the deficiency in sounding distance in the two ears; then begin with your tuning fork at the median line of the forehead, and apply the tuning fork at all points between that line and the ear, and then continue down toward the inferior angle of the mastoid process.

Note particularly the variation in perception of sound at the different points; that will indicate to some extent at least where you will locate the cause.

If you get stronger perception of sound as you get nearer to the ear, from the forehead, then the deficiency is probably in the ossicles. Test also in connection with this partial deafness the upper and lower maxillary bones, and make comparison of sound perception by the patient in the case of the upper maxillary, lower maxillary and mastoid. That will point particularly to the condition of the mastoid cells and the Eustachian tube. (The mastoid cells equalize the pressure by physical air conditions - the retention or non retention of the amount of air that is found in connection with these air cells.

In testing conditions of the ear you should pay great attention to the mastoid process. Some cases that are curable from the standpoint of hearing are incurable from the standpoint of the mastoid process. If you find solidification in the mastoid cells, if the mastoid cells have lost their power to take in and throw out the air in connection with the cells, you have an incurable condition; you may stop its progress, but you cannot cure it. The respiration process in the mastoid cells is very important.

In cases somewhat deficient in hearing, or when the Eustachian tube tends to close up, simply vibrate over the mastoid process, and unless there is a condition back of that, it will overcome the condition altogether. It is the power of accommodation you get. Cited case where mastoid cells are solid, and if patient was spoken to directly in a line with ear, the hearing was acute as ever, but if spoken to faceward, the hearing was as dull as ever.

The ear receives and then transmits through the ossicles; the only vibratory apparatus there are in the membrane, are the ossicles and the little terminal

rods in connection with the labyrinth.

In people hearing better where there is a noise, the whole ear and head is in vibration, the whole structure in which the ear is imbedded is set in vibration.

Where the cranial bones require to be thrown into vibration, where the ossicles are thrown into vibration, it is radiated all over the head, but as soon as the head is thrown into vibration, by the noise all around, you get ossicle concentration. This is demonstrated by the use of the muffled tuning fork. In the medley of sounds some sounds are picked up by the ossicle.

DISEASES OF THE EAR

1. **Catarrhal Conditions.** This is probably the most common of all diseases that we have to deal with. It is usually associated with or secondary to catarrhal inflammation of the nasal cavity or of the pharyngeal cavity, or of the naso-pharynx, the catarrhal inflammation extending to the tympanic cavity along the membrane path.

Symptoms; intense aching pain in the ear, definitely localized, not generally radiating away from the ear. That distinguishes the two types we have frequently

1. Localized pain, not generally radiating away from the ear;

2. Localized pain in the ear, with radiation. Another symptom is the heat, which the patient feels in the ear in connection with the area of the tympanic membrane. Some patients will complain of it as a hot blast going into the ear, not perceived outside of the level of the tympanic membrane. Now, of course, the feeling of the hot blast is because the tympanic pressure is inward, and the inflammation in the tympanic membrane causes the feeling of heat.

On examination, the tympanic membrane is red, much congested and inflamed, this condition is technically called Otitis media, found either in acute or chronic form. In the chronic form the membrane is inflamed, enlarged and thickened, and there is a temporary deafness, more marked when the inflammatory process is more severe.

Another symptom that we find in connection with the condition is Tinnitus aurium, along with the tendency to breathe through the mouth.

D DEAFNESS This represents a condition of the ear, in which there is a lack of deficiency in the sense of hearing, usually secondary to some chronic condition for example, inflammation, congestion. One of the most common causes is what is called "Functional deafness"

is a vasomotor congestion. That you may almost certain when in the deaf condition you find tinnitus as a symptomatic condition of deafness; tinnitus is a symptomatic condition of deafness. When you have any of that beating or thumping noise you have a vasomotor disturbance, a very common form of deafness existing where you have the internal ear involved.

Tinnitus and sometimes is due to a tumor or growth of some kind pressing on the brain or the auditory nerve. In other cases it is due to an inflammatory exudation at the base of the brain. In other cases it is associated with a diseased condition of the mastoid process, diseases of the nucleus of the auditory nerve secondary to catarrhal condition.

Among the lesions that we find in this functional deafness, atlas and axis lesions are most common; the most common of these two is a right sides luxation, accompanied by rigidity of the muscles in the suboccipital, tightness of the other soft tissue structures from the posterior around to the anterior, in other words, it is like a binding of the tissues from the posterior as a starting point around toward the anterior, so much so in some cases that the head is kept dropped backward and to the side on account of the tension. You have the same condition where the head is inclined to one side, greater muscular rigidity in the skin and face is more on one side than on the other.

Among the other general conditions we find in connection with the ear are discharges in the form of pus or a mucoid, thick, glairy substance, or a thin serous transudate. In some cases we find the discharge of a thin, watery fluid, sometimes sweated out from the mucous membrane of any portion of the canal, a drops of perspiration in the skin, in other cases flowing out streamlike, concentrated at one part, and comes out through the membrane like a little spring - it is localized at one place. This fluid discharge is the cerebro spinal fluid, representing in some cases chronic hydrocephalus; in other cases, hyper pressure in the lymphatics circulation of the brain or other intra cranial structures. I mean the pressure of the lymphatics as it passes through or in connection with those intra cranial structures - this is an important point, as we will find later on.

The hydrocephalic condition is sometimes found in grown up people, and that is the only way the brain has of freeing itself if an excess of cerebro spinal fluid. You will find in some conditions what the old doctors used to call "Water in the brain" in children. One of the old methods of treatment was to apply blisters behind the ears. Now the object of that is good; it stimulates the flow toward the auditory apparatus, the mucous membrane of the mastoid process is continuous with the membrane of the entire ear, and also with the

naseo pharyngeal membrane of the Eustachian tube, so if you stimulate the flow of the fluid towards the mastoid process you will stimulate it toward the ear, nose, mouth, etc. and in many cases of so called water on the brain cures were made in that way, it was the only way to get access to the condition. That is one of the most successful lines of treatment also in hydrocephalus in the effort to relieve the brain of the excess of cerebro spinal fluid. It is more scientific than so called modern allopathic methods who give calomel and get the intestines in a diarrheal condition; calomel drains away the fluid of the body, but it will not drain the fluid away from the brain.

SPECIFIC DISEASES OF THE EAR

For the purpose of classification they may be divided into three parts;

The internal ear;

The middle ear;

The external ear.

There is some advantage in classifying in that way, both as a subject of general knowledge and as to the subject of treatment.

1. The Internal Ear

The present knowledge of the physiology and pathology of the labyrinths of the ear is so incomplete, that we cannot discuss the subject as freely as some other subject; in addition to this, the labyrinth is beyond the field of physical examination, and symptoms are so similar in all ear diseases that is very difficult to differentiate the symptoms in the internal ear conditions. That is probably one reason why so many people, when they grow up are deaf because the internal ear condition developed in childhood, and they were not attended to because the symptoms were ascribed to something else and treated accordingly, and the child grows up incurably deaf when the deafness might have been prevented by proper treatment in childhood.

Pathologic conditions that affect the internal ear may be traced to --

a- Conditions that are found in the internal ear itself - for example, anemia, hyperemia, hemorrhage, inflammatory processes, hypertrophy, or atrophy of the structures that make up the labyrinth of the ear. Among these conditions are sclerosis of the mucous membrane of the labyrinth, resulting, if continued, in the ankylosed condition of the stapes - changes in the labyrinth itself caused by sudden and intense sounds, or by sudden atmospheric changes, for example, resulting from explosion, shocks, forcible inflation of the tympanic membrane. These conditions act insidiously on the labyrinthine structure, causing changes that may or may not be apparent at the time (Very much like some of the other disease that we mentioned before, e.g. endocarditis,

pericarditis, where you have conditions passing away and leaving sequential defects having serious effect on the after condition of the patient.

b- Conditions outside of the internal ear, for example, lesions involving the auditory nerve or any nerve fibre connection that establishes relation with the auditory nerves, lesions in the cervical centers of the brain, interfering with the functional action of the auditory nerves, changes in the auditory tract modifying the perception of sound. (Distinguish between perception and conduction, which we will speak of later).

Sometimes they result from systemic disturbance, reflexes being carried to the ear by the auditory nerve or its connections; on account of the close connection vascularly of the tympanum and labyrinth through the intervening wall, diseases of the tympanum may travel to the labyrinth - for example, acute otitis media, hyperemia, infiltration, or inflammation, or a change in the intra labyrinthine pressure may result from otitis media similarly vestibular cochlear sclerosis may cause obstruction that reacts on the internal ear.

In old age there is always a tendency to change, probably of sclerotic type, in the auditory nerve and its terminals in the cochlea. In other words, that accounts for why old people have a tendency to become deaf, aggravated, of course, by previous conditions that may be found in the ear.

Inflammation of the brain or its membrane may also react on the internal ear - for example, cerebro spinal meningitis, cerebral tumors, cerebral abscess, hydrocephalus, inflammation of the brain, cerebrulum or spinal cord.

The acute infectious diseases also cause changes in the internal ear - for example, scarlet fever, measles and diphtheria, particularly. These tend to produce hyperemia, anemia, or transudation of the auditory nerve or its terminals, on account of either --

1. Toxic conditions;
2. Vasomotor changes, or
3. Inflammatory processes.

These inflammatory processes will, of course, be transmitted by the membranous continuity.

This is found principally in childhood, dulled or deficient hearing being the sequence. The best preventive of this condition is corrective treatment of the vasomotor congestive or inflammatory processes - that is, treating the acute infectious diseases.

Under catapathic treatment this ought never to be found; it nearly always is found under medicinal treatment because the elimination is made through the blood, which becomes intoxicated, and becomes just like nephritis, an effect that cannot be avoided in a great many cases.

We also find conditions of the internal ear secondary to constitutional diseases, such as rheumatism, gonorrhoea, syphilis and tuberculosis. I place rheumatism first, because I think that is one of the most common of all of the forms in which we find the involvement of the internal ear. Certain drug substances are also the exciting causes of these internal ear diseases; quinine is the most prominent of all. Some people are exceedingly susceptible to quinine, because of its attraction to the red blood corpuscles, and it becomes a constituent part of the same globin. It is the hematinized blood that the quinine affects, and has an affinity for. Those people who are susceptible to quinine, are those who have the most hematinized blood, and are most liable to congestion. Anemic individuals, as a rule, can stand a great deal of quinine.

Alcohol, salicylic acid, arsenic, mercury, phosphorus, sulphanel, carbon disulphide, are among the drugs referred to. Sulphanel has a sedative action especially on the brain; has a great affinity for the brain substance and that brings it in connection with the middle ear. Sometimes trional is used for the same sedative, but it has more of an action on the spinal cord than the brain it is used in spasms. Both sulphanel and trional are exceedingly cumulative, especially trional, which remains imbedded in the nerve tissue, and sometimes it is exceedingly difficult to get it out.

Among other causes of ear diseases are disturbances of the circulation of the blood - a variation in the vasomotor system, etc.

SYMPTOM - There are two types of symptomatic conditions in relation to the internal ear - most important because we have no means of getting into the internal ear it is beyond inspection, and we are entirely dependent on these symptomatic conditions.

1. Irritation or irritating symptoms; these are vertigo, tinnitus, hyperaesthesia, in connection with sound, note that particularly; it is not a general hyperaesthesia; it is hyper with connected and in some way produced by sound - it is hypersensitiveness on particular sounds, nausea, vomiting, these are irritative symptoms that we find.

2. Paralytical symptoms - for example, dullness of hearing, difficulty in perceiving or appreciating sound. The deafness may be either partial or complete - as a ~~paralytical~~ paralytical symptom, the second is nearly always sequential to the first. A diagnosis of these internal ear conditions is very difficult to make if the auditory tract is involved (any part of the auditory nerve apparatus), because it is difficult to say where a lesion

is located - whether it involves the terminals of the auditory nerve in the labyrinth, or is located in the cortical centres.

If the tympanum and the labyrinth are both involved, it is very difficult to say which is primary and which is secondary. Two types of tests are applied:

a- The Quantitative test by the use of a watch or a tuning fork or the voice, or some other sounding apparatus this indicates only the extent of the impairment of the sound perception; that is applying the test as we mentioned it before - you can get the distance, the sound can be heard, or the length of time in which the particular sound can be received.

b- The Qualitative test - this is used to enable us to differentiate between a lesion involving the conducting part of the apparatus and one involving the perceptive mechanism.

Now this of course goes back to what we said about what is meant by perception as a physical and psychological process; in the combination perception it is a psychophysical process.

Normal hearing implies to definite limits - that is, there is a point below which the ear cannot hear, this represents what is technically called lower placed sounds, or lower plane of hearing. There is also a limit above which sound cannot be heard by the ear; of course, that applies to the range of the sound also. These two limits mark out the dividing lines in normal hearing between audition and deafness. You would not call a person deaf to a sound that would be inaudible, for example, vibration at a rate of 100,000 per second, we could not hear that sound, but would not be deaf, because the sound is above the possible range of hearing. By finding out what the upper and lower limits of these vibrations are, we are able to apply tests which will determine the condition of the sense of hearing. Physicists have placed the two limits at 16 and 32,500 vibrations or variations of tone per second. Below and above these limits the ear is not able to take in the sounds. There are 43 octaves in the Corti rods.

We also require to determine another point in this qualitative test, viz, the length of time during which a particular sound could be perceived.

a- By conduction through the medium of the air

b- By conduction through the medium of the bone.

This second point is not a necessary point from the standpoint of physics, but we will use it in differentiating between the perception.

We use perception rather than hearing, because perception here implies an indiscriminate use of the word hearing; a deaf person may hear an indistinct noise - of

the street car, and yet there may be no perception of the sound; that is hearing, and not perception - you may hear below or above the limits spoken of, but it is not perception.

In making these tests use the tuning fork. The most satisfactory one is Blakes' tuning fork; and the best for general diagnostic purposes, is called the 512 - that is the tuning fork which is tuned on the scale of 512 vibrations per second. You will get them in any multiples of these, divided by two or four or multiplied by two or more - you can get any sort of variety of tuning fork but the 512 is the most satisfactory, because it is about the middle of the scale. Hold the tuning fork in line with the ear that is straight out from the ear; normally the ear should hear the sound of the tuning fork for 30 seconds, that is to say, one sound of the tuning fork, then place the base of the tuning fork against the mastoid process about one inch behind the external auricle of the ear, the object of that is to get it far enough away from the ear that the mastoid will pick up the sound, and not the auricle - you want to transmit it through the mastoid process; normally the ear should hear this sound for about 15 seconds. The result of this is, that under normal conditions the direction of the sound in passing through the air is about $2\frac{1}{2}$ times its direction when it passes through the bones.

Now, that is applied as a normal test and on the proportional variation you will get normal or abnormal variations of the ear. If the tuning fork is held in front of the ear, the sound vibration is transmitted;

- a- Through the air to the tympanic membrane
- b- From the tympanic membrane to the chain of ossicles
- c Through the chain of ossicles to the labyrinth.

If any obstruction is present - for example, some foreign body or substance in the ear, ear wax, for example, solid hard mass, the external auditory canal is obstructed or the mobility of the membrane may be modified from the standpoint of tension, or the ossicles may be less conductive than normal on account of adhesion or the presence of fluid in the tympanic cavity, causing the sound to pass through the fluid medium; in all these cases the direction of the perception of sound will be lessened.

By placing the tuning fork against the mastoid process conductivity of the bone becomes the test of the condition of the internal ear as if the external auditory apparatus were non-existent, consequently if the nerve supply of the labyrinth, the auditory centre of the brain or the auditory nerve connections are affected, the duration of the perception of sound will be modified to the extent of the lesion and the amount of the modification you will get by comparison. You know that it ought to be at the rate of $2\frac{1}{2}$ - get the air conductivity and compare it with the bone conductivity, and you will know where the trouble lies.

Sometimes in nervous diseases where the patient is excitable, the duration of the perception of sound is increased, but as a general rule it is decreased.

If you want to make absolutely strict tests, use the fork tuned to C and also use different tuning forks, different rates of vibration. Remember that the lower limit is always tested by the large tuning fork which has a rate of vibration say 32 per second. Test the upper limits by the small tuning forks at say, 3008 - that is, the highest you will get keyed on the C basis.

If you want to test the ear in what is called the "inaudible field" you will use what is called the Galton whistle. You will get that Galton whistle keyed on the C scale up to 84,000 vibrations per second; of course it is not necessary to use as high as that, because it is away above the scale of audible perception. In psychological experiments the Koenig rods are used that test very accurately the high vibrations.

Another test that is applied is to place a number of tuning forks on the skull along the median line, either on the vertex or on the forehead or on the maxillary bone, then close to the external auricle of the ear - the sound produced by the tuning forks would be heard more distinctly on the side corresponding that is, the side of the ear is covered, for example, if there is an impairment of the sense of hearing, either in one or in both ears, there is an inequality in the sense of hearing, either in one ear or in both ears, there is an inequality in the sense of hearing. If the patient hears the sound louder in the deafened ear, that indicates an obstruction to the conducting apparatus of the ear on the same side. This may be caused by the presence of a foreign body - for example, accumulation of ear wax, dried up, and representing an obstructive body in the ear.

If in applying this test the sound is heard more clearly on the impaired side, then the lesion is one involving the perceptive apparatus of the other ear - that is, of the ear to hear as well as the better ear.

This is a most thorough and perfect test to be applied to differentiate between involvements of the conducting apparatus toward the internal ear. You must have the number of tuning forks so that they can be applied in the proper way, then the cage is put on the head so that these tuning forks can be set in vibration, and the test made in a simple way.

The principles that may be laid down in connection with these experiments are:

"If there are lesions involving the conducting mechanism the length of time occupied in transmitting the sound through the air is diminished (apply the test with the tuning fork right in front of the ear). The length of time occupied in transmission through the bone medium remains normal and the lower tone limit is raised - that is the third characteristic in this particular case.

If the internal ear or the perceptive mechanism is involved, there is adiminution in length of time occupied by transmission, both through the air and bone, but there is a greater diminution in the direction of the bone condition, and the upper limit is lowered, the extent of this depending on the amount of interference with the labyrinthine nerve distribution.

Now, these are important points, that are brought out in the test, three points in either case, and these are the points you should look out for in testing the ear in that way.

Physiology of the middle ear in regard to

A. Eustachian Tube.

(1) First function is to act as ventilator to middle ear.

(2) To act as a sewer for drainage to carry secretions from the middle ear into the nasopharyngeal field.

B. Mastoid Cells.

These cells represent development that takes place after birth, there being no mastoid cell development at birth. During childhood the mastoid is in an undeveloped state and it is only in adult when the mastoid development is complete. This is one reason for inflammatory conditions in childhood. Renewal of air in the mastoid cells takes place from the nose and mouth and probably the function of the cells and process is to act as an oxygen tank to supply the necessary air in hearing. The pressure of air in connection with the tympanic membrane is dependent on the mastoid cells.

C. Attic and Drum cavity.

Here we have the drum head, ossicles, and muscles, and these all form the middle ear apparatus. Some writers claim the drum is absolutely necessary in hearing. This is not so because persons with a perforated ear drum can hear.

In regard to the ossicles there are several theories. They represent continuous bone field for the transmission of sound. If this is so why are they separated and why not one whole bone. Birds and crocodiles have only the single bone. In man, the chain of ossicles is made to conduct sound but acts as a check upon the sound vibrations, that is, chain of ossicles are brought into play only when the sound is to be intense, it acts as a safety valve. In other words sound enters the middle ear through bone field and this acting as a protection to the labyrinthine structures.

These bones are counter checked in their action by the muscles, tensor tympani and stapedius muscles, e.g. action of the tensor tympani drives stirrup up into the oval window.

In the ear the same muscle force acts as a damper in all sounds for O. The stapedius muscle has a secondary counter modifying function, in confirmation of this theory we find that the lower three octaves in the scale of sound cannot be heard by the ear only when the articulation of the ossicles is complete or where there is a single bone. Another point for this theory is when stirrup becomes immovable the perception of vibrations is entirely

lost. ,this condition is found in neurotic people.

Diseases Of the Middle Ear.

The internal surface membrane of the mastoid process, the Eustachian tube, the tympanum and the tympanic membrane, is covered over by a continuous lining membrane - hence inflammation existing in one part will very rapidly be transmitted to another part. This means that the most common type of disease involving the middle ear is some form of inflammation, Inflammation of the tympanic membrane - this is technically called in the field of practice myringitis here we have either a primary or secondary inflammation - frequently primary - the inflammation existing at the same time in the tympanic membrane and in the nasopharynx, in connection with exposure to cold or in connection with sea bathing sometimes, where the water acts there as a primary irritant in developing the inflammatory process. Sometimes also accompanying irritation from certain substances that enter the nose or ear - for example, found in connection with certain factories or manufactories, where they have particular irritating types of dust that enter into the ear and nose.

The secondary meningitis follows an inflammation of the lining membrane of the external canal, or the inflammation of the tympanic cavity, .

Morbid Anatomy. The first change is an injection of the small blood vessels that run from the periphery to the center of the membrane, uniting with those vessels that run along the handle of the malleolus. First stage is vaso-motor paresis. The second stage is hyperemia; continuing to increase until the whole membrane becomes entirely flushed with blood, at this stage, the congestive condition involves the surface layer of the mucus.

The third stage is the stage of infiltration. This involves the epithelial layer and when the infiltration begins there is a diffused ecchymosis. In some cases crops of vesicles develop on the membrane. At this stage the membrane can be differentiated into two conditions - white, lumpy spots of vesicles, and the balance of the membrane a dull, dark color, losing its normal transparency. These vesicles may either disappear by absorption, leaving little pitted or rough points on the membrane, some what like the pits in smallpox, but much smaller, or the vesicle may become pustular and ulcerate, and there you have a chronic condition that may go on and ulcerate for some time afterward.

Symptoms. In mild otitis there is a slight pain, the sense of pressure and fullness in the middle ear, tinnitus, and very slight disturbances, if any of hearing. In severe cases, especially if abscess or suppuration is established, the pain becomes very intense, more particularly at night, and chills and sweats are not uncommon. That is, you have a typical symptom of a suppurative condition going on in the system. In this case you do not get high febrile temperature because there is not systemic disturbance enough. The absence of intense pain, and the ~~presence~~ presence of only slight auditory disturbance, clearly differentiates the primary from the secondary inflammation.

One other point that deserves to be mentioned is that in secondary meningitis, when the involvement proceeds from the middle ear, the pain is very intense, and there is a very marked interference with the sense of hearing.

Now; both of these conditions are due to the same cause, the pressure and obstruction caused by the fluid accumulation. The question may be asked where does the accumulation come from? It comes from the exudation or a kind of exfoliation of the walls of the middle ear (mucous membrane) and when that is thrown out it remains in the cavity as a fluid. This causes the pressure and inflammation.

Inflammation Of The Walls Of The Middle Ear.

Types of disease in connection with the middle ear, are inflammation of the Eustachian tube, sometimes called catarrh of the Eustachian tube, also Eustachian calpingitis. Here we have an acute and chronic condition - the most common cause is acute coryza, or an acute inflammation of the naso-pharynx. In either case it is secondary to the acute infectious diseases in childhood. In this case it is a tubal obstruction caused by and originating from the naso-pharyngeal condition: it is also secondary to abnormal conditions of the nasal or pharyngeal cavities - for example, adenoids, enlarged turbinates, modifications of the nasal septum, hypertrophy of the tonsils, or the presence of foreign bodies respired into the nasal cavity.

It is also secondary to irritating substances or traumas produced by instrumental operations of different kinds - for example, catheterization, where the catheter is introduced into the nasal cavity and pushed away back to reach the Eustachian tube: following this, you may have an inflammation of the Eustachian tube.

It is also secondary to some of the constitutional diseases, like rheumatism, diabetes, etc.

Morbid Anatomy. Here we find that the mucus

membrane of the Eustachian tube is continuous with the mucous membrane of the tympanic cavity and the naso-pharyngeal cavity, consequently the inflammatory process is continuous throughout that entire field, extending generally last to the lining of the tube. The beginning is in hyperemia, followed by injection of the mucous membrane: then the next stage a swollen and puffy condition diminishing the lumen of the tube, the mucous membrane is soft and flabby, losing its tonic condition, and there is a formation of mucilage - a mucous adhesive substance, which becomes strongly adherent to the wall. This semi-fluid gradually tends to the solid condition of resorption - that is the fluid is reabsorbed and you get a more or less solid formation resulting.

The cartilagenous portions of the tube is the most vascular portion, consequently that is the portion that is most commonly involved, the closure of the Eustachian tube, either partial or complete, by a mucoid substance, which closes the tube up completely, modifies the air pressure in the tympanic cavity, absorption of the air taking place, the result of which is that the membrane and the ossicles are retracted inward on account of the greater atmospheric pressure. If this continues, the ear drum membrane is retracted so as to rest in contact with the promontory of the internal tympanic wall.

Starting from this we find that the tympanic vessels are enlarged and congested, the static condition of the blood causing an exudate, serous in its nature, filling up the tympanic cavity, and tending to push the membrane outward. Then instead of air pressure you would have fluid pressure, which would push the membrane outward, giving a bulging condition and that represents the chronic condition of Eustachian salpingitis in the acute form, bulging due to increase of air pressure.

Symptoms. The starting point is an acute naso-pharyngeal inflammation, followed by a sense of fullness and pressure, and a feeling of numbness in the auditory canal.

Sometimes there is a dull pain, either in the tympanic cavity or in the pharynx. Then, among other symptoms we have tinnitus, defective hearing, numbness all around the auricles of the ear, and adjacent structures, dizziness, ~~making~~ rattling sound of the voice in the Eustachian tube on vocalization, and the presence of peculiar cracking sounds in the tube in deglutition - that of course, is due to the process of swallowing.

Physical Examination. Shows retraction of the ear membrane the inferior part of the malleus also

retracted: the short process of the same prominent. Then we have a diagnostic sign of great importance - on the inflammation of the tympanic cavity these form of retraction disappear and the sense of hearing becomes normal - you change the air pressure and this will cause all other symptoms to disappear. That is, the diagnostic, patho-pneumatic symptoms of salpingitis. If the inflation does not restore the hearing and remove the retraction, then the symptoms described indicate tympanic inflammation. You have your choice between Eustachian tube inflammation and tympanic inflammation

Another diagnostic symptom from the functional side of the involvement of the Eustachian tube is the raising of the lower limit of the hearing, and the lessening of the period of air conduction.

In the normal hearing the limit is 16 to 30,500 the lower limit is generally raised by duplicate - may be 40.

Inflammation of the Tympanum.

This is either catarrhal or suppurative. In the catarrhal form we find either acute or chronic infection, with thickening and infiltration of the membrane, hypersecretion and a serous exudation.

In the suppurative type there is a stasis and engorgement followed by a purulent exudate; that is disintegration of the white blood corpuscles. The catarrhal inflammation is commonly called Otitis Media. The acute form associated with or secondary to acute coryza, pharyngitis, grip in connection with atmospheric changes; also secondary to the infectious diseases, obstruction of the Eustachian tube, the obstruction of the nasal cavity, nasopharyngitis, adenoid growth, fluid accumulation in the tympanic cavity. This fluid, for example, in sea bathing or throat gargling, where the fluid passes up and is retained or passes through in the external auditory meatus, and is retained; also secondary to the constitutional diseases (absorption slow in these cases). The best method of relieving this condition is to apply a suction outward to the external ear. Make your hand hollow into a vacuum and close up the nose at the same time - you get better results.

Morbid Anatomy Hyperemia injection, swelling and infiltration of the tympanic membrane; then hypersecretion with serous effusion filling up the tympanic cavity, either a limpid fluid or a mucilaginous substance.

In some cases the whole of the cavity and membrane is involved; in other cases only in patches.

Later on we find an epithelial desquamation from the membrane, followed by fluid infiltration of the fibrous layer, and this may lead up to rupture. In some cases the inflammation extends to the mucous membrane of the Eustachian tube toward the mastoid process by the same continuity we mentioned before.

Symptoms. The earliest symptoms are those of acute coryza, or pharyngitis, depending on the pre-existing condition, followed by the sense of fullness and pressure in the Eustachian tube, difficulty in hearing, tinnitus, either the dull hohe or the sharp acute pain, the pain being aggravated as the condition develops. The condition usually comes on at night, or is aggravated at night, and is more severe in children. On typical signs of this condition is tossing of the head laterally, with the placing of the fingers in the ears. Among the other symptoms we have rapid pulse, profuse perspiration, sudden rise of temperature to 104 or 105. Following this there is a discharge from the ears, mucous-serous in its nature, generally giving relief to the patient - that is, you have freed the tension and pressure, and all of these symptoms, which allows the patient to go to sleep. In the adult we do not generally find this discharge, but in its place the filling up of the attic of the ear with the secretions, with the tendency of the secretions to spread to the mastoid process, indicated by tenderness and pain, and a sense of fullness in the mastoid back of the ear. In the adult, exhaustion is more complete than in a child.

Inflammation of the Mucous Membrane of the Tympanic Cavity.

Symptoms. In the early stages of the inflammation the tympanic membrane is retracted, an account of the obstruction of the Eustachian tube. The blood vessels around the handle of the malleus are hyperemic and injected; the short process of the malleus is enlarged. The drum surface becomes hyperemic, and later becomes edematous: epithelial desquamation takes place, diminishing the resisting power of the membrane and tending to rupture. Hearing is repaired, air conduction very much diminished, the lower tone limit is raised and the upper tone limit slightly reduced; the effect of this on the sense of hearing is impairment of and confusion in the field of perception. (Most of these internal ear troubles are brain conditions or represent brain conditions.)

Chronic Otitis Media. Sometimes called Chronic Tympanitis - inflammation of the tympanic membrane.

The causes are similar to these in the acute type. The chronic generally resulting from repeated acute attacks. Among the special types of causes we find chronic nasal catarrh, obstruction of the nasal cavity, or of the pharynx in connection with enlarged

turbinates, enlarged tonsils, adenoid growths, polypoid growths, etc. Sometimes the chronic type follows the incomplete resolution of an acute condition: this is particularly the case of alcohol users and those who use tobacco, where the saturation of the naso-pharyngeal membrane keeps up the hyperemia and the inflammatory process.

Morbid Anatomy. Here we find two types of morbid changes:

1. Hypersecretion, with resultant hypertrophy.
 2. Hyperplasia, with resultant adhesion. Hyperplasia is the accumulation of some of the elements of the blood on the surface— for example, a mucous membrane, or the outer surface of a blood vessel, that coagulates and becomes more or less organized, becomes some type of tissue— connective tissue is the most common.

In the one type we have a hypersecretion of the normal secretions in excess.

In the second case it is the blood that is throwing out certain of its elements, and these becoming mucilaginous and forming tissue.

In the first case or type, which is most common, there is a thickening of the mucous membrane due to a venous static, and this gives rise to hypertrophy. This begins in an engorgement of the blood vessels, followed by exudation, the secretion being retained in the cavity, the accumulation taking place in the fibrous layers— sometimes lime and salts deposits are also found. The congestion extends to the Eustachian tube, causing retraction of the drum and a tightening and shortening of the tensor tympani; the net result is (that is the sum total of all these conditions when we get it in the chronic form) the restricted motility and vibration of the chain of ossicles and the consequent impairment of the sense of hearing.

Now, you can see what that means, you have not only the condition you had before, but you have the cavity occluded and the ossicles not vibrating; you have practically the suspension of the conductivity of the middle ear, and that is what we find in the vast majority of cases where we have chronic deafness. It is not an incurable condition, if you clear out the hypersecretion and relax the tensor tympani and the vibration of the auditory ossicles. In the second type, instead of hypertrophy there is atrophy of the fibrous tissue and the destruction of the secreting glands. The net result of this is a chronic degeneration of the middle ear: the exudate in this case is absorbed, except that which forms the ossicle adhesion and the sclerotic condition of the membrane and the stapes, ankylosis frequently resulting. Sometimes fibrous ridges are formed across the auditory canal, and the sclerosis of the ligaments pulls the ossicles in different directions. In this case there is a fibrous band vibration, and the individual ossicles

vibrate, but there is not the normal continuity of vibration in the ossicles chain; in some cases this will cause entire deafness - in other cases it will cause the hearing of many noises. So that if the ear is practically deaf, there is such a confusion of sounds.

Among the symptoms the first and most marked is impairment of hearing.

In the hyperblastic type there is a progressive development in the symptoms, marked by peculiar noises in the ear - for example, hissing blowing whistling, etc. depending on what conditions we find from the morbid anatomy side. In some cases these abnormal sounds are persistent, in other cases they are periodical; in some cases these noises stop when there are external noises of greater intensity, on account of the increased motility of the ossicles up to the point where they vibrate in unison, caused by the greater volume of sounds - this makes the vibration lower down in the scale of intensity, audible because the chain of ossicles has ceased to be rigid and vibratory insulation.

Now this explains the condition that you find sometimes for example, a person can hear you whisper on a street car, and in a room where it is absolutely still they can hardly hear if you are shouting at the top of your voice - that is the hyperplastic condition that is found in that sort of cases.

In the hypertrophic type we find a dull sensation in the tympanum and a burning sensation in the nasal cavity, pharynx, Eustachian tube, etc. that is, the whole chain of cavities which have that continuous membrane, that is due to the dry catarrhal condition. The atrophy that dries up the mucous membrane and gives it that burning sensation.

In the hyperblastic type the pain is periodically, it is an acute stinging pain instead of a dull aching pain, such as we find in the other type.

If the Eustachian tube is not involved, the tympanic membrane is normal or nearly so, that it may be supposed to be normal if the Eustachian tube however, is closed, the membrane is retracted. In the Hypertrophic type the drum is retracted by shortening of the tensor tympani tendon. Adhesions of the membrane are also found, the lower tone is raised while the upper is normal, the period of air conduction is diminished, while bone conduction is normal, unless in the case of an internal ear involvement. In this case both air and bone conduction are diminished.

Another type of the chronic inflammation of the middle ear is the suppurative type of otitis media.

SUPPURATIVE OTITIS MEDIA In the acute form it is

generally called SUPPURATIVE TYMPANITIS.

The causes are similar to those we find in the acute catarrhal type: it is found principally in the fall and late spring - that is to say, in the damp season, in the tropical countries - called the rainy season. It is also found in other seasons in climates where there are sudden changes (Chicago is a good example). It is most commonly secondary to nose-pharyngitis and some of the infectious diseases, like scarlet-fever, measles, influenza, small pox, and also secondary to constitutional diseases.

The acute catarrhal form of otitis media may become suppurative by perforation, the perforation taking place in connection with the tympanic membrane sometimes it is secondary to surgical operations in connection with the ear - operations on the mastoids, or in connection with the auditory vesicles. Sometimes it follows traumatism of the external ear, irritants passing into the ear, either along the Eustachian tube or through the external orifice of the ear, pyemic conditions.

Morbid Anatomy. Is the same as the acute catarrhal type, except that it is more aggravated. We have first the engorgement of the vessels, the exudation principally the white blood corpuscles, causing swelling, white swelling, on the surface of the membrane. This necrosis may extend to the bones, particularly the incus. The point of primary infection is generally the attic, because of the large number of folds of the mucous membrane in that region, and the exudation of the spongy connective tissue. In some cases this spongy formation is so great that the attic is entirely obliterated - in this case there is an accumulation to the extent that it is entirely filled up: the result of this is that the suppurative process passes toward the mastoid cells and sets up mastoiditis; in many cases the entire cavity of the tympanum is filled up with broken down tissue until the pressure is so great, that the membrane is ruptured, and then we have the ejection of the debris into the external ear.

Symptoms Are similar to those found in the acute catarrhal type, except the such greater intensity of the pain, and then number and severity of the constitutional disturbances. It is more common in the child than in the adult, and is always aggravated at night, (Most diseases have that aggravation, because the system is in more passive state and the blood is circulating slowly, the blood pressure being raised, tending to the static condition, which is the foundation of the inflammation). There may be something also from the vitality side, the vitality being lowered during the night, and lessened in activity, its dis-

tribution being effected, these conditions should be watched more closely than during the day. Mental and physical effort also aggravates the condition. Inflammation from the physiological side is simply an exaggerated metabolism. Exercise will increase metabolism, and so exercise will aggravate inflammation, because it makes the metabolism more rapid in connection with the metabolic process taking place.

One marked symptom that we find in this that we do not find in the other catarrhal type is the physical weakness and body emaciation - in other words, this is the general symptom, that we find in general pyemia, while we have only local pyemia (if we can speak of local pyemia), in other words does it affect the constitutional physiologically that emaciation is present in otitis media, or is emaciation a sign of this particular case?

The connection would be nervous, and this is association with the severity of the symptom, for example, pain, etc. in other words, it is an aggravation of all other symptoms.

If the mastoid process becomes involved, the constitutional disturbance becomes still more aggravated, this seems to take place through the lymphatic system - that is, classifying the cerebro-spinal fluid under the lymphatic system. Here we find intense pain and tenderness in the mastoid region, paralysis of the facial nerve, intense pain in the lumbar region, meningeal symptoms with high temperature, convulsions, deliriousness, and sometimes extensive paralysis. In some cases infection passes to the sinuses in the brain field here we get general pyemic symptoms, for example, sudden elevation of temperature, dropping down to ^{sub}normal, chills and sweat, these are the three symptoms - always found in connection with pyemia.

If the rupture of the membrane takes place and the accumulated matter is discharged into the external ear, all of the symptoms subside.

Among the physiological signs we find engorgement and bulging out of the tympanic membrane, dark red, dull and lusterless appearance, of the membrane, accumulation of secretion in the cavity, with bulging of the drum head, the secretion passing down from the attic along the path of the incus. In other words, it is passing down and out toward the external meatus.

In the chronic type the etiology is acute catarrhal otitis media with infection, or acute suppurative otitis without resolution. Infection takes place from measles, scarlet fever, tuberculosis, syphilis, scarifera, gonorrhoea: irritation is sometimes the exacting cause - for example, the excessive use of alcohol,

that of course means that the alcohol accumulates in the blood and acts as an irritant, poisonous food (spoiled or wasted food developed from degenerative process) plus accumulation in the tympanum or in the mastoid process, excema in or around the external ear; lupus in connection with the ear or the surface of the mastoid process is also a cause, Lupus is not due to a cold sunless condition - it is contagious lupus is more of the nature of a cancer than any other disease: it is destruction of the tissue resulting from the accumulation of toxins, and it has a special affinity for certain portions of the body: it is not incurable.

Morbid Anatomy. The starting point is the static condition of the blood, most marked in the mucous folds of the attic: this is followed by infiltration and hypertrophy, the hypertrophied structure becoming organized it is a tissue with new blood vessels formed entirely for itself - you get a non-trophic tissue rather than normal and trophic.

Then we find patches of atrophied and hypertrophied structure, granulomatous may be found anywhere in the membrane - in some cases the entire membrane is destroyed: in all cases it is honey-combed, that is, little atrophied patch perforations, and you have little holes like a sieve in connection with it. This may pass to the mastoid or meninges of the brain, as in acute type.

Symptoms. The only marked symptom is the discharge into the external ear. If this discharge is found following pharyngitis, or rhinitis, the inflammation passes from this point to the tympanum. The discharge generally has a foul odor. In some cases there is accumulation of fibroid - sometimes calcareous deposits are found.

Hearing may be normal or diminished, but hearing for conversation is generally normal. If one ear is affected that is, if the chronic suppurative condition is in one ear only, by placing the tuning fork over the median line of the forehead or the top of the head, the sound is more distinctly heard in the affected ear, the lower limit of hearing is elevated, the upper limit is normal, unless the internal ear is involved, the period of air conduction is diminished, the bone conduction is normal: if the internal ear is affected, the upper limit of the hearing is lowered and the period of bone transmission is lessened.

Inflammation Of The Mastoid.

(Acute or chronic mastoiditis).

The primary representing a rare condition resulting from traumatism, specific diseases, like tuberculosis, syphilis, or due to exposure of some kind.

The secondary type is a catarrhal or a purulent condition, associated with the extension of catarrh or suppuration from the tympanum in connection with the antrum; also extension from the wall of the meatus of some infective process.

Mastoid inflammation is very often found either in a mild or severe form, an account of the continuity of the mucous membrane.

Morbid Anatomy. Congestion of the mucous membrane of the mastoid, as the secretion accumulating in the tympanum tends to gravitate to the mastoid through the antrum, especially when the patient lies on the back; this is one type of the exciting conditions of the development of the inflammation of the mastoid in any acute form of otitis media.

In the next stage there is a hypertrophy of the mucous membrane of the mastoid, with an infiltration or deposit of a calcareous material, this leads to the destruction of the pneumatic spaces, causing a solidification of the mastoid when the congestive condition or the hypertrophy interrupts the communication between the cells and the antrum. This gives rise to abscess development with resultant necrosis of the osseous walls, resulting in the formation of a large cavity, with granular substance accumulation.

Symptoms. In the primary form are fullness, pressure, tension, in the mastoid, with a dull aching pain behind the auricle of the ear, more severe at night, the tympanic symptoms develop with an increase of temperature, acceleration of the pulse. If the mastoid tip is involved, then the movement of the head causes pain, on account of the tension of the sterno-mastoid muscle.

In the secondary type the tympanic symptoms appear first. In the drainage of the mastoid is not affected through the tympanum, the pus will escape some other way, for example, through the external cortex or tip - a swollen lump appearing at the point of exit.

In other cases the pus will escape into the canal of the middle and external ear.

The intercranial structures become involved in connection with the blood vessels, or by the pus absorption through the internal mastoid wall: in

this case we get the symptoms, for example, of meningitis, such as headache, at first intermittent, then persistent, with restlessness, photophobia, sleeplessness, nausea and vomiting, persistent high temperature rigidity of muscles, of the neck, dilation of pupils of the eye, with paralysis of 3 and 5 nerves. In all cases, the lateral sinus is involved, indicated by a sudden rise in temperature with a sudden fall to subnormal, with sweat and chills. If the system is involved, we get the symptoms of pyemia; in some cases thrombosis develops, here we get circulatory disturbances, edema of the orbit of the eye, of the nasal cavity. If the thrombosis extends into the internal jugular vein, there is a swelling in the tissues around; the formation of emboli generally result in septic pneumonia. If suppuration takes place in the brain, cranial pressure symptoms develop. If the abscess becomes chronic, there are really no symptoms until rupture takes place, with apoplectic and paralytic conditions.

TRAUMATISM OF THE TYMPANIC MEMBRANE

This traumatism is caused by some use of an instrument, point to remember in examination. Sometimes it is also caused by variations in the external air pressure, causing an abnormal pressure on the membrane. We find traumatism, for example, sometimes in children, we find a child with some irritating ear condition, has used a slate pencil or lead pencil or something of that kind - just pushed it in the ear to relieve irritation and has caused traumatism of the membrane so the same thing- cited case of a man who used a toothpick, a piece of which stuck in the membrane, making a little hole, which may cause harm and which may not. It may be a starting point of a rupture later on; if entirely healthy, it will heal up. Sometimes injuries resulting from the introduction of a sound into the Eustachian tube (the ear is too delicate to deal with by shotgun methods) might use alphonzone, peroxide of hydrogen is destructive, if there is a perforation, or if a depression, it may bore a perforation where there is none.

You had better use a syringe or oil in the hardening of the ear wax - simply drop in some oil, which will soften, soda and water not as good as soap and water - the best thing to use in the ear is almond oil, if anything is necessary to use - this will be mentioned in connection with treatment.

Symptoms. If the membrane is suddenly torn

or ruptured, the patient will hear a sound in the ear, a sort of reechoing or rumbling sound in the ear, due to the pressure of the air with atmospheric force, and there will be a sudden, sharp pain. That is due to the modification of tension due to the rupture of the membrane.

The normal tense condition of the tympanic membrane has a direct bearing on the Eustachian tube and the auditory ossicles; the sudden break in the tympanic membrane will affect all of these structures.

Then we have vomiting, tendency to dizziness, and sometimes tendency to fainting, and even fainting itself. There will be a sudden shock to the patient, and that will mean collapse - in most cases these cases will soon be relieved, but there will be left behind an inflammation, with the inflammatory pain throbbing in the ear, and a rumbling noise from without in - that is to say it is a current of air going right into the ear - abnormal and internal pressure meeting together and struggling for supremacy until the outer atmospheric pressure established its supremacy, and then the condition passes away.

In cases of perforation or rupture there is likely to be suppuration in connection with the middle ear, with a tendency to the infection passing to the mastoid on account of the pressure the air pressure would be in direction of the air cells, and that will determine the continuity towards the mastoid cells rather than towards the internal ear or the Eustachian tube. If the perforation of the membrane is quite small, and there is no infection, there probably will be no inflammatory process at all; the condition in other words, will spontaneously clear up, leaving the perforation behind. If there is extensive rupture, on the other hand, then there will be an inflammatory process, because of the irritation and possible infection, and this will leave behind permanent rupture, cicatricial tissue formation, and probably adhesions, with a permanent interference with the sense of hearing.

Among the causes that we find for tympanic membrane rupture we have, for example, displacements or fractures of the cranial bones, with an extension into the ear, and fractures or injuries, for example, of the mastoid temporal bone and inferior maxillary bone. This fractured condition sets up congestion and inflammatory process, with serous exudation, and sometimes hemorrhage towards the ear. In this case we will have symptoms of fractures, concussion and inflammation and there is infection, or

suppuration. In this last case there is a great danger to life on account of the tendency to suppuration back to the point of traumatism, and from that towards or to the brain.

Another set of condition that we find in rupture of the tympanic membrane are sudden changes in the air pressure, the sudden change in the air by explosion (if gun or cannon the nearer to the ear the more liability to change in the air.

Sometimes the sudden action of the water on the ear, for example, what is called surf rolling, sometimes by the inflation of the Eustachian tube in connection with physical examination, or what is called ear massage. There is a vibratile massage apparatus that is used to massage the ear by using air pressure as a medium, and sometimes that produces rupture).

In all or most of these cases there is possibly a weakened condition of the membrane, due to change of tension, cicatricial formation, calcification process, that is, any accumulation or deposit of calcium in the substance of the tympanic membrane. That, of course, would be secondary to some necrotic process of the ossicles, or it might possibly be due to rheumatic gout, for example, small nodules around the external ear - also small areas of atrophy in the tympanic membrane.

In some cases there is an excessive accumulation of fluid, in the tympanic cavity, fluid pressure internal and air pressure external, causing perforation or rupture. In other cases the accumulation of sero mucus or sero purulent matter in the tympanic cavity tends to force itself out towards the external meatus - this is caused by

- 1 The production of an inflammatory process in the tympanic membrane.
- 2 The transexudation of material through the inflamed membrane until the membrane loses its tonicity and tension, when the fluid in the tympanic cavity will force the perforation or rupture on account of its accumulating force.

In non-inflammatory conditions rupture is generally found in connection with the antra inferior portion of the membrane. The nature of rupture in this case is generally that of a clean cut wound, from the standpoint of the edges of the ruptured membrane, the edges of the wound being slightly or markedly separated according as to the internal pressure is relieved or continued.

In other words if you have accumulation of fluid in the tympanic cavity, which escapes with no pressure, there is a slight separation, but if you have a sero purulent accumulation there, there will be an increased pressure, and that will keep the edges markedly separated.

In these cases there is often adhesions, due to the formation of an adhesive material from the fibrinous accumulation of the deposited coagulated blood. On examination beyond the rupture there will be found congested blood vessels in the intra-inferior area, and a yellowish discoloration of the mucous membrane. In flation through the Eustachian tube causes a blowing sound as the air passes through the perforation.

One of the chief points in connection with injuries of the tympanic membrane is its medico legal impairment of hearing. For example, if some one is thrown from a street car and thrown on the ear with sufficient concussive force to rupture the tympanic membrane, it might be a question later on whether the rupture of the tympanic membrane would interfere with the hearing, or whether it was so slight as to cause no interference with the hearing.

As a general rule, if there is no involvement in the tympanum by infection or of the labyrinth as a result of the concussion, the rupture will be slight, and a slight opening will heal up in perforation in the membrane or no perforation at all. In both of these cases there will be a very slight interference if any with the hearing. On the other hand, if the perforation is infected, and if the concussion has interfered with, the internal ear, hearing will be more or less permanently impaired.

EXTERNAL EAR First of all, the inflammatory conditions, which figure most largely in these types. Inflammatory conditions involving the external ear.

1. Perichondritis - Sometimes called perichondritis auricular - here we have an acute inflammation of the perichondrial substance, following generally as a complication, hematoma of the ear (blood tumor) - sometimes it is secondary to trauma, sometimes it is secondary to frost bite of the ear.

SYMPTOMS Among the first symptoms that we find is a gradual appearance of an inflammatory process, marked by a bright red swelling, sometimes localized at a particular point of the auricle of the ear - at other times general.

Sometimes there is a quick development following frost bite if there is wrong treatment, the proper way to treat frostbite is to rub or hold in snow or something cold. Heat hastens the inflammatory process.

Among the symptoms that we have are severe pain and a sensation of heat, either extending over the

entire auricle or in a particular portion of the external ear. The next is a serous accumulation followed by exudation, the exudation taking place between the cartilage and the perichondrium. Sometimes this exudate becomes so extensive that it extends of the entire auricle of the ear, obliterating the landmarks of the auricle, for example, hollows and ridges that typically mark the auricle of the ear. If this continues, the serous accumulation coagulates and then there is a suppurative process established. In most cases the pus will spontaneously evacuate, of course, that is the tendency of the pus to get out on the surface wherever it is located. The result of the pus evacuation is generally some deformity in the structure of the auricle of the ear. That is to say, a portion of the substance of the ear will suppurate away - for example, the ear will be left without that particular portion of the structure. Cartilagenous substance anywhere in the body where there are suppurative condition is very liable to be destroyed, and if there is destruction there is a little chance for repair - that is a cartilagenous necrosis will not be followed by cartilage resolution; it is different from all other structures, even the bone tissue, because the bone tissue cannot be destroyed and then repaired, unless there is absolute destruction.

Perichondritis differs from hematoma in the point that the hematoma gives swelling secondary to blood effusion, without an inflammatory process - in other words, hematoma is a non inflammatory process condition.

Perichondritis on the other hand, has exudation and pus formation only subsequent to an inflammatory process. There is no tendency to destruction in hematoma - in perichondritis there would always be a trophic condition.

OTITIS OF THE EXTERNAL EAR

Here we have an inflammation, either acute or chronic, involving a part or the whole of the lining membrane of the external meatus, with a tendency to transfer the inflammatory process to the epithelium in the same area.

Now, of course, that means epithelium right in connection with the external ear, or any portion of the ear, either internal or external, that would be connected by continuity.

This is sometimes called Otitis Externa Diffusa. It is seldom, if ever, found primary - it is secondary to infection in connection with the reception of the pathogenic germ into an abraded portion of the

skin, the abrasion being caused by traumatism, the presence of foreign bodies, irritation resulting from acrid discharges - for example, discharges from some portion of the middle ear, or a traumatic condition of the skin caused by acids or other irritating substances.

In some cases it is secondary to the presence of furuncles (the type of boil we find frequently in relation to the epithelium) - boils in relation to the epithelial tissue - carbuncle extends down to the fascia.

Now in regard to the symptoms, in the simple case there may be no symptom at all. Symptoms, however, appear marked when the osseous structures of the ear are involved, and the superficial portion of the tympanic membrane is involved.

The first symptom noticeable is an itching sensation, aggravated by anything that causes the blood to circulate - for example, warmth would aggravate the itching process; that is one reason why it is worse at night. The next symptom is intense pain, sharp, sometimes cutting pain, radiating from the point of pain along the cartilaginous and membranous structure, always aggravated by the movement of the ear or the jaw; then we have as the third symptom tinnitus with tendency to deafness; the inflammation first affects the skin, the cuticle being hyperæmic and tending to infiltration. This is followed by the accumulation of a serous fluid, and may result in -

- a- Coagulation and pus formation;
- b- Peeling off of the upper layers in the form of a white membranous substance;
- c- Exoriation of the surface of the exposed skin, which becomes exceedingly sensitive and liable to irritation.
- d- In some cases there is abscess formation, the abscess being found chiefly on the surface of the tympanic membrane in the form of multiple ulcerations, at times resulting in perforations that is to say, multiple ulcers will represent little perforated holes later on.
- e- Sometimes the ulceration gives place to granular tissue formation in the wall of the meatus in other cases, necrosis of the structure of the meatus.

Now, these are the five different stages that mark the development of the condition in the acute form.

In the chronic form proper we find a persistent itching, particularly associated with warmth, continuous pain radiating along the cartilaginous membrane or bone path, and desquamation and broken down substance accumulating as debris in the external ear.

The physical condition in the examination indicates a swollen condition of the membrane, extending to the tympanic membrane, a swollen and infiltrated condition of the skin, a peeling off of the epithelial layers, and the presence of the germs representing micrococcus, or the fungoid aspergillus, a little white fungoid growth like the growth on a piece of cheese, that in some cases is somewhat difficult to differentiate from moist exudate eczema of the ear which seems to be eczema and on microscopic examination turns out to be this aspergillus.

When the condition in the chronic stage becomes purulent, there is a discharge from the tympanum, and at the same time the perforation from the ear drum; that is, this is one of the forms of the chronic in which the pus formation appears, representing the chronic condition.

Another form of the inflammation of the external ear is ACUTE CIRCUMSCRIBED OTITIS, or funicle of inflammatory process - the sebaceous and the ceruminous glands are located in the cartilaginous portion of the ear. We also find in the same areas the hair follicles which represent glandular roots of the hair - these three - the sebaceous, ceruminous and the hair follicular glands are centers of infection, resulting in the development of a boil or carbuncle. The starting point is abrasion in the skin, due to some injury, irritation, and through the abraded surface the pathogenic germs enter, and these follicular glands become the culture field for the development of these germs.

Among the exciting causes of weakening and abrasion of the skin, we find eczema, moist eczema commonly, as we find it in connection with the ear.

DIFFUSED OTITIS

The same form of injury, secondary to constitutional disease, such as diabetes. In some cases it is said that the climatic conditions represent the primary cause, particularly in spring and fall seasons, when people shed their skin like chickens shed their feathers - that is more applicable, of course in tropical climates.

Among the symptoms that we find the first and most marked is a localized, circumscribed itching; some writers describe it as a buring itch, an itch at one particular point that seems to bore in.

Some types of a hemorrhage condition are similar to this.

Then there is sense of fullness in connection with the local area involved, with pain radiating away from the point of fullness, always increased,

in mastication, movement of the head on the neck, and aggravated by pressure on the auricle of the ear - for example, lying on it in bed. The pain is generally intense, causing headache, general debility of the patient, with a high temperature. As this boil comes to a head, or grows at any rate, there is a tendency to close the auditory canal, accompanied by tinnitus and more or less deafness; as these conditions develop, the congestion tends to pass towards the tympanic membrane and the internal ear, and at this stage we have the congestion and the swollen condition of the cervical, parotid, maxillary and the perinauricular glands, this being due to the extension of the inflammation and the infiltration that takes place in connection with these particular glands.

In some cases inflammation and infiltration extend to the whole lymphatic gland system.

Sometimes the inflammatory area is associated with the posterior wall and edema is developed in that portion of the mastoid that is close to the ear in connection with the external meatus. The inflammation or the edematous enlargement appears as a flattened tumor (this is not the word "tumor" in the general sense of the term) slightly congested, if the suppurative process is located deep down in the structure. If it is located on the surface, the boil is rounded, and is an elevated structure, inflamed and gradually increasing in size until it breaks or obstructs the auditory canal. If it breaks then the other symptoms that are developed previously are relieved; if it does not break, but fills up the meatus, then the pain becomes more intense than before. In some cases the development of the abscess is checked by the contraction of the tissue structures, or by the development of granular tissue. In this case we find successive boils following one another in a series, and this may go on until the infection becomes so general that the entire external meatus is involved, sometimes the middle ear. In a few cases we find an external otitis of diphtheritic origin, the infection passing from the fauces towards the external ear; here we have the diphtheritic membrane formation in the ear, similar to that found in the throat in the typical case of diphtheria; this is found, of course, practically only in those cases where you have the diphtheritic constitution, where the patient is seemingly so infected or affected, or both, by diphtheria toxin, that any open part of the body may show the diphtheritic membrane formation. Sometimes you find it associated, for example, with the rectum, vaginal walls, etc. secondary to a diphtheritic

constitution and this will be the case where that extends to the outer ear.

Another of the inflammatory processes in connection with the external ear is OTOMYOSIS, this is a condition that is associated with bad hygienic and bad dietetic condition, for example, in the slum districts, as they are called. It represents an inflammatory process of the parasitic origin, the parasite being the *Aspergillus Nigricans*. Some call it *Aspergillus Flavescens*. The germ enters into an abrasion and sets up a congestive condition. One of the symptoms of its presence is itching and the result of its presence is desquamation. It is one of the burrowing germs which bore in between the layers and in that way causes desquamation.

Another of these inflammatory conditions is Otosyphilitic, in which we have the syphilitic infection. This is manifested by nodules, these nodules taking the form of gumata, condylomata or ulcers.

GUMMATA second stage, new tissue formation, may be exostosis in connection with the bone and something to that in connection with the other tissues.

May find it in the brain, muscle, though it is most frequently found in the bone. It is not like exostosis, unless there is abscess, pus formation, and that is nearly always what is called tertiary condition in syphilis.

CONDYLOMATA A warty excrescence that appears resembling a wart; hardened and irregular in appearance. The typical syphilitic condyloma is the cauliflower excrescence. These are found on the skin or on the mucous membrane, which is the corresponding surface of the skin. They may come on the ears or any part of the body.

In some cases these growths extend into the ear, even into the labyrinth of the ear, then you have an extensive process of destruction going on - it is really what you might call a syphilitisation of tissue.

There is a strife between doctors as to the origin of gonorrhoea and syphilis, some claiming it is a germ, and some that it is a toxin condition. It is a degenerated condition of the blood or lymphatic system - that is to say, an internal intoxication with a development of a poisoned condition extending generally or locally over the entire system. Gonococci are not primarily the cause of gonorrhoea,

but the produce - you have the whole system syphilitized or gonorrhoeal so that practically none of the system is free from syphilization, and to deal with it by mercury is to use mercurialization instead of syphilization

The homeopathic theory is that the syphilis represents a chronic constitutional condition of the system, and underlying there is a modification of the vitality centers the surface manifestation is not a disease, but the expression of the disease.

FOREIGN BODIES AND GROWTHS

Foreign bodies applies to anything that may be inserted into the ear - for example, buttons, etc. that may be accidentally or willfully put into the ear. Sometimes we find insects entering into the ear, becoming embedded into the ear wax or entangled in the cilia - sometimes extending to the tympanic membrane.

In regard to the symptoms, in some cases foreign bodies may be present in the external ear without any symptoms, provided that they do not obstruct the canal passage, or occlude it. The tendency for the wax is to accumulate around the foreign body, encasing the foreign body, increasing its size, and tending up to the point where it will entirely occlude or obstruct the ear. The symptoms are those of irritation, for example, the sensation of fullness, of pressure, the modified sense of hearing, slight tinnitus, dull aching pain.

We also find reflex disturbances, particularly involving the pneumogastric nerve and the 5th cranial nerve, because the nerves both have small fibres distributed in the lining membrane of the external meatus. Among the reflex disturbances that we find are neuralgia, cough, nausea and vomiting. There are some people that to syringe the ear will produce intense sickness - that is, of course, the irritated condition of the meatal lining. Some cases we find even epilepsy.

There is doubt that a great many of these reflex conditions are associated in some way with the ear - that is why so many with the same type have earache in connection with coughs, colds, throat troubles, etc.

If the irritation of the external ear continues, it is likely to produce an inflammation or swollen condition of the mucous membrane and this is sometimes developed to ulceration or granulation tissue formation.

In some cases we find secondary to foreign bodies in the ear, mastoiditis, inflammation of the

Eustachian tube, and even meningitis. One specific form of foreign bodies in the ear is the accumulation of ear wax, ceruminous plugs, as they are called, in the ear. The normal ear wax is the combined product of the secretions of two sets of glands - the sebaceous and the ceruminous glands; both of these sets of glands are localized in connection with the cartilagenous portion of the external ear. The normal method of disposing of an excess of this secretion is by absorption in connection with the movement of the jaws, particularly the inferior maxillary. In some cases it accumulates on account of hyperemia or infiltration of the membrane; this hyperemia reacts on the glands, causing hypersecretion, following this, the secretion becomes solid by resorption of fluid.

This may also be caused by exzematous condition of the lining membrane of the ear; also in connection with or resulting from the hardening of the meatal membrane in external otitis. A slight inflammatory process, in other words, will cause the accumulation of the ear wax, and not allow it to get away.

(Dr. Still's theory is that the ear wax is retained in the ear, and does not pass down as a lubricant to those portions of the throat that may be involved in the croupy condition, but becomes solidified, consequently the old method recommended in these croupy conditions was to liquify the ear wax by some solvent - glycerine is not good to use because it has a drying effect; some form of oil would be better than glycerine).

The function of the ear wax undoubtedly is in relation to movement of the inferior maxillary and whatever else is connected with the inferior maxillary movement.

Symptoms. There may be no symptoms at all until and unless the ear plug becomes so large that it exerts pressure on the walls of the meatus, or pressure on the tympanic membrane, or prevents the passage of the sound waves. In these cases we will have the symptoms of obstruction - sense of irritation, pressure, itching, tinnitus, functional deafness, etc. If the plug comes in contact with the tympanic membrane there will be a sharp pain, and this will be aggravated particularly by the lateral movements of the jaws. In some cases we will get the reflex symptoms we find in foreign bodies - coughing, vomiting and spasms of some kind it is claimed delirium results from that obstructive condition of the ear.

In regard to the nature of the wax plug it self, there are two types - the yellowish color and dark brown color, and it may be soft or hard. In the light yellow plug there is a soft.

semi greasy mass on account of the presence of an excess of fat elements; in the dark brown it is hard, solid plug; in some cases there is a combination of the two - a dark brown center with the yellow substance on the outside.

In other cases, instead of the plug, you have the impaction of the wall round about; the wax is adherent in little masses around the wall of the meatus, generally dry. Sometimes in removing it the lining membrane is removed at the same time, the adhesion is so marked.

SEBACEOUS CYSTS.

These are called "wens" or atheroma of the ear. Here we have a non-inflammatory tumor, either soft or hard, produced by the accumulation of substance within the sebaceous gland. The starting point of the accumulation is some irritation involving the duct of the gland. This irritation involving the duct of the gland. This irritation may be mechanical, for example, calcareous deposit, little calcium soft deposit, or some of the crystals, those we find with the uric acid condition of the same.

It may also be caused by inflammatory processes in the surrounding structures, or by excessive secretion, especially the secretion is less fluid than normal, and in some cases traumatic causes. The cyst may be located in any portion of the auricle of the ear; more frequently found in lobule.

The most serious and troublesome cysts are located in the external meatus - there the cyst is so closely associated with the cartilage, because these sebaceous glands are embedded like the ceruminous glands, in the cartilage structure; the cyst gradually enlarges without pain, unless it is at or near the osseous part of the ear. The only modification in the ear function is found when it becomes so large as to obstruct the canal, or when it interferes with the movements of the jaws. There the pain associated with the movements reacts on the auditory apparatus.

H E M A T O M A

Sometimes called atheromatoma, represents a blood tumor, is an accumulation of venous blood, hence it is a bluish or reddish blue tumor or lump. The condition, whatever may be its cause, represents an effusion of blood between the cartilage of the ear and the perichondrium. Sometimes it is caused by a traumatism - falling on the side of the head, for example, quite a severe blow on the ear may cause it; sometimes it is caused

by pulling the ear.

It may also be caused by the rupture of a blood vessel or the separation of the perichondrium from the cartilage; that would be applicable particularly in rickets or in certain types of tuberculosis where you have the tendency to the deposit of those calcareous nodules in the cartilage, or in connection with the cartilage of the ear.

SYMPTOMS Following traumatism, there would be a sudden appearance of a reddish blue tumor, generally on the anterior surface, associated with the sensation of heat and pain, sharp and throbbing, the pain increasing and radiating as the effused blood separates the cartilage from the perichondrium.

The point to be noted is, that it is a common condition found among the insane. The older writers claim that it is due to effusion secondary to brain lesion - lesion inside the cranial cavity, the separating bone structure being so thin that the effusion passed out to the ear, the nearest surface point, and we know all these effusions, like pus formation, tends to get as near the surface as possible.

Modern writers, especially those who have taken up the subject of reforming the treatment of the insane, claim that it is due to the rough treatment of the insane, of course that may be an explanation from the traumatic side, traumatism as a cause of diffusion - the explanation has something in it at least, in the same case that the intracranial would undoubtedly cause effusion.

There is one thing that seems to confirm to that, and this is, that all the multitudes of the insane patients there is congestion of the eye - that does not explain, on the basis of traumatism. The vast majority of the insane have conjunctivitis or injection of the white part of the eye, that is undoubtedly due to the intracranial lesion, and if that is true of the eye it may be true of the ear also.

DEFORMITIES OF THE EAR.

In some cases we find congenital deformities, either in the external auricle of the external auditory meatus. This congenital type of deformity is not infrequently in rickety children and in the cases of hereditary neurotics, and also in the insane - that of course, is not generally the congenital type, but may be a very typical condition that you find among the insane is peculiar irregularity of ear development: they are also associated

with nervous diseases. You will find in some of the writings on the nervous and mental conditions that ear deformities are spoken of as stigmata that is, ear marks (used in the wide sense of the term) of the nervous, or mental or degenerative process. Among the other variations in the external ear we find modifications due to traumatic conditions - for example, abnormally in position of the auricle of the ear; abnormality in the clefts and furrows and grooves, etc. This is particularly associated with changes in the development of the auditory canal.

The claim that is made by anatomical anthropology is that the ear follows the particular development of the cranium. You know that the canal of the ear from the outer to the inner is not a straight canal; it has a certain angular curve; that angular curve is a part of the structure of the canal for the reception and conduction of the sound waves. If you have certain facial formation or a certain cranial formation, the ear will have to adapt itself to the facial and cranial formation. There is a multitude of types along these lines among the monkeys and apes following the development of the cranium; every one has a peculiar facial and cranial contour, and will have a particular canal; the auricle will be shaped and in position corresponding with the canal, because the auricle is only the outer shape, it is simply the general formation of the cranium and face.

Among the deformities we also find Exostosis - on the bones, and what are called spurs on the cartilage - that is to say, these are abnormal growths on the bone and cartilage formation; these are associated with rickets, tuberculosis, etc, and a type of constitutional disease.

ECZEMA

1. The last disease we have to discuss in connection with the ear, this is the only one that falls under the head of muscular condition of the ear.

There are a great many varieties of eczema, a slight form of which is sometimes called "Scalding" of the ear - such as might almost apply to chafing as of skin on other portions of the body, for example, would correspond to the scalding condition.

Salt rheum is another condition, these are all different varieties of the general itchy condition.

Eczema is really an inflammatory condition of the skin, that is, it is a type of dermatitis;

in the inflammatory condition we have as causes, constitutional disturbances; constipation is one of the most common of all the causes, rheumatism, gastric dyspepsia, neuritic conditions, local irritation produced by certain kinds of soap - for example, acids applied to the surface of the skin, etc. Eczema represents;

1. An Inflammatory Process with a continued excitability due to the presence of some foreign substance from the constipation, rheumatism, etc. a substance that is in the blood and localized in the blood at that particular point, and is causing the inflammatory process. It may be a toxemia, for example, as it is in constipation.
 2. Acute or Chronic Vesicle, papule or pustule formation. Vesicles are little rounded elevated blisters, elevated skin with fluid underneath. Papules are enlarged papillae, filled with fluid. Pustule is filled with pus.
 3. Infiltration, followed by the thickening of skin surface, resulting in cracks, desquamation, and sometimes serous or sero purulent exudation.
- Now, that is a very typical condition, you will have the eczema on the head, for example, along the side of the head, and and it will not give any trouble for sometime, and then you will find the skin thickened and then it will crack, one seam crossing another.
4. Crustation - that is the accumulation of the serum of sero purulent fluid forming a crust - that is typical of the chronic form.

Symptoms- The most marked symptom in the early stage is itching, and you might say the second stage was the scratching stage. Then there is a development of a prickly heat - that is to say, it is a prickling sensation and a boring at the same time, a combination of the two sensations.

The only effect that eczema has on the hearing is the tendency it has to develop into the ear - that is, from the external toward the internal ear - and the liability to some mechanical interference in the canal, which is due to the crustation or thickening of the skin surface.

T R E A T M E N T

The treatment is based on the anatomy and physiology of the ear. The ear may be divided into two great divisions - the conducting and the receiving apparatus; the apparatus for the perception and appreciation of the sound vibrations.

1. IN THE RECEIVING AND CONDUCTING APPARATUS

1. The Auricle -

The function of the auricle is to receive, concentrate and initiate the conduction of the sound waves. The auricle represents an oval, hollow funnel shaped cone, with its convexity inward (towards the middle ear) In structure it consists of a cartilagenous framework, really an appendage to the temporal bone, bound to the temporal bone by muscular and ligamentous attachments. The covering of the auricle is a reflection of the integumentary structure on the side of the head, so that the sensory nerve distribution is the same as on the side of the head.

2. THE EXTERNAL AUDITORY MEATUS

Represents the convex apex of the cone of the auricle, the outer one third of which is cartilagenous, and the inner two thirds membranous, and the apical portion osseous, representing the annulus tympanicus, or bony ring, which originally is the slender bony ring, but later develops into a broad osseous band about three fourths of an inch in width (around the band or ring.) The skin of the auricle, when projected inward into the meatus, becomes blended into the membrane, the membrane being exceedingly delicate and strongly bound to the osseous ring (that is, it represents a kind of capsular bone covering). In the cartilagenous portion we find cilia, sebaceous and ceruminous glands, the function of which are lubrication and protection of the ear from the entrance of foreign bodies and the protection, also from undue intensity of velocity of the sound waves which are broken by the cilia and the sebaceous secretions that are found in the meatus. It varies in different individuals, some times it is narrow, sometimes wide.

The blood supply to the external ear is derived from the superficial temporal and the posterior auricular arteries. The annulus tympanicus gets its blood supply from the internal maxillary artery. The nerve supply to the external ear is from the auricularis magnus and from the posterior auricular branches which supply the auricle, the auricle-temporal branch of the inferior maxillary supplying

the auditory meatus, that is to say, the convex part of the auricle or its extension into the middle ear. The blood supply applies to number 1 and 2

3. The Middle Ear, representing the terminal portion of the conical convex canal, including; brane, forming the outer, wall of the tympanum, oval in shape, lying obliquely in relation to the axis of the canal. The result of this is that the upper posterior part of the membrane is the part that is subject to examination by inspection. The outer layer continues as a lining membrane of the meatus and that is continuous with the integument of the auricle. The middle layer is a fibrous structure and the inner layer is mucous, representing the continuous reflexion of the mucous membrane lining the tympanic cavity and that is continuous with the mucous membrane that passes to the Eustachian tube and also the lining of the mastoid cells and is a protection from cold moisture, etc. as these come in contact from with, so you have two layers above to protect the deeper layers.

Within these layers the long handle of the malleus is placed so that it can be followed from above downward towards the entire membrane, where it terminates in a small pit from which a light cone area projects downward, acting as a reflector of rays from the surface of the tympanic membrane downward. That is a very important point in the examination of the ear, because when you throw the light into the ear you throw it against the upper posterior portion of the membrane, which is the point that is right in front of your eyes, in making the observation. When the light rays are thrown in they are reflected downward toward the lower and anterior portion of the tympanic membrane, and from that the rays are reflected inward through the tympanic cavity to the internal ear. It is nature's provision for making the examination of the inner portion of the ear possible.

As the upper end of the malleal handle there is a whitish yellow promontory, which is called the short handle, from which white membranous folds pass toward the upper part of the wall of the auditory canal - these folds are called "Schrapnell's membrane."

1. The tympanic membrane function is two fold; to protect the middle and internal ear from foreign bodies, insects, moisture, intensity and velocity of sound waves, etc.

2. To act as medium of converting sound waves into sound vibrations, and transmitting these sound vibrations to the auditory vesicles. In the

internal ear we have sound waves, and these are changed to sound vibrations by the tension of the tympanic membrane.

a- The tympanic cavity - representing an irregular cavity beyond the membrane, located in the posterior portion of the temporal bone; the cavity is divided into two parts - the upper part, or attic, that is located just beneath the level of the middle lobe of the brain, separating the brain by a very delicate bone plate representing the roof of the tympanic cavity. The lower part of the cavity is called the atrium, representing the floor of the cavity, much narrower than the roof, and located just above the jugular fossa. The importance of this floor of the tympanum depends chiefly on the fact that the outer wall of the cavity, which is formed by the projection of the roof, together with the annulus tympanicus, we find two foramina of entrance and exit for the corda tympani nerve as it passes over the inferior surface of the membrane, between the long malleal handle and the incus in its passage in the submaxillary gland and there you have the connection between nerve conditions and the ear directly through the corda tympani, and the explanation of many of these disease in which there is interference with the hearing, as some peculiar sensation - for example, crackling sounds, which are associated with the extra tension of the drum membrane - the inner wall is located between the tympanic cavity and the carotic canal, representing;

The tympanic opening of the Eustachian tube;

The tensor tympani canal

The tensor tympani canal

The cochlear process, which is a delicate osseous structure separating the two canals.

In the posterior wall we find the antrum, through which the attic communicates directly with the mastoid cells, and that antrum is located in the upper part of the posterior walls so that you have direct continuity between the antrum and the mastoid cells.

The chain of ossicles uniting the tympanic membrane with the sinistra ovalis, that opens directly into the vestibula of the internal ear.- The function of these ossicles is to receive, transmit or modify the sound vibrations as they pass from the membrane through the tympanic cavity towards the internal ear. These ossicles are kept in normal position and tension in two ways;

1. By suspensory ligaments;
2. By articulation.

This gives us normally the combination of a free

and elastic with a rigid and vibrating movement. If the ligaments become hardened, or stiff, or the ossicles become ankylosed, there is an interference with the mobility of the osseous structures, and an impairment of the hearing, that is illustrated sometimes by saying that it would be analogous to having a pipe organ with one great big pipe like a skokestack, compared with an organ of many delicate pipes - you would get one voluminous sound through the pipe and with the other you would get many sounds, which would be music.

The Eustachian Tube

Represents an opening on the anterior wall of the tympanic cavity; from this point we have an osseo cartilagenous tube passing inward and downward through the petrous portion of the temporal bone; terminating in a funnel shaped opening in the naso pharynx, just behind the inferior turbinate bone. During the process of deglutition the tensor palati and the levator palati muscles relax the pharyngeal part of the Eustachian tube by pulling forward the anterior wall and elevating the lower portion of the tube, permitting the air to pass through the tube to the tympanic cavity. This equalizes the air pressure on the two sides of the tympanic membrane, producing tension in the membrane responsive to the vibratile action of the sound waves.

The mucous membrane of the tympanic cavity is continuous with the mucous membrane of the naso pharynx, the Eustachian tube and the mastoid process. It represents a delicate dilated membrane, only slightly vascular; the same membrane continues to the mastoid spaces, acts as a covering to the ossicles, and the muscles and ligaments within the tympanic field - that is to say, it is a kind of capsular membrane as well as being a lining membrane this gives us a mucous membrane tension which can be controlled by all of the different parts of the structure of the ear (Eustachian tube, mastoid process, muscles, ligaments, etc) The mucous membrane is the net result of the action of all of the structures.

The Muscles within the Tympanic Cavity

The two muscles that we find within the ear, are

1. The tensor tympani - with its origin in the upper wall of the eustachian tube and along the sides of the canal. It then passes out above the eustachian tube, bending around the cochlear process almost at right angles, running across the tympanic cavity, to be inserted into the inner border of the long malleal handle. The functions of these muscles are :-

a- to pull down the membrane and produce tension, the degree of tension in the membrane depending on the tension of the muscle.

b- it moves the foot of the stapes inward, thus tending to increase the pressure within the labyrinth (intra-labyrinthine pressure)

2. The stapedius muscle - originating in the bony cavity of the pyramid to be inserted into the neck of the stapes by means of a tendon. The function of this muscle is antagonistic to the tensor tympani muscle, pulling the foot plate of the stapes outward, and tending to diminish the pressure within the labyrinth. The net result of the antagonistic action of the two muscles is to keep up a uniform pressure within the labyrinth under all conditions modifying changes produced by atmospheric variations and alterations in sound waves, sound vibrations and sound apparatus.

Now you see that there is thrown into the muscles of the ear very much more of a burden in connection with the sense of hearing than is generally supposed they have to bear.

The internal ear, at one time, was supposed to be a delicately perceptive apparatus, receiving and transmitting the sound vibrations to the brain. That is not true. The pressure within the ear is quite as important as pressure in the tympanic cavity, and that explains one point that has been very difficult of explanation, and that is, with the rupture of the tympanic membrane you can still have the sense of hearing. The labyrinthine fluid has in itself the capacity of pressure which is able to overcome when the tympanic membrane is ruptured. It seems that Nature has made provision of a complimentary and supplementary condition to keep up the hearing when the external protection has ceased to be there, and of course, that emphasizes the fact that these conditions of the ear can be very materially benefited by osteopathic treatment, because the muscles, with the nerve and blood supply, can be made very accessible to treatment in connection with the ear conditions.

The blood and nerve supply of the Middle Ear.

The blood supply we find in connection with these different sources;

1. The tympanic branches of the internal maxillary artery.

These enter the tympanic cavity through the Glassarian foramen, and supply the wall of the antrum - and also the tympanic portion of the eustachian tube, forming an anastomosis in the tympanic membrane with the style mastoid division of the posterior auricular.

2. The superficial petrosal, branching off from the middle meningeal, supplying the attic through the petrosquamos suture, the minute distribution being made through the tympanic roof, the malleus, the incus, and the internal wall, thus blending the blood supply to the internal and middle ear.

Now there you have the blood side the corollary of what we find in the mucous membrane - that is, not only have you air pressure but you have blood pressure unified between the internal and the middle ear; a provision of nature from the blood side as well as from the air side for compensating in case of the distribution of the tympanic membrane.

5. The tympanic division of the internal carotid anastomoses with the tympanic and Vidian branches of the internal maxillary - giving minute blood distribution to the floor of the tympanic cavity and the internal wall of the cavity distinguish from the outer wall.

4. The blood supply to the eustachian tube comes from the pharyngeal division of the external carotid, some of the minute branches of the internal carotid, and some branches from the descending palatine and pterygopalatine divisions of the internal maxillary. In other words, that establishes the blood relation between the ear, mouth and the throat.

The mastoid process lies inferior to and just behind the ear, the principal landmark being the sternal cleido mastoid attachment and the lower border of the osseus protuberance.

Internally the mastoid structure represents irregular freely communicating air spaces, communication being established through openings in the walls of the spaces, and with the tympanic cavity through the antrum, During childhood there are practically no spaces, in the adult life there are practically nothing else but spaces. You will find in the adult life a number of spaces separated by delicate walls, except in catarrh, where they are filled up with catarrhal secretions. In the child life the internal wall which separates the mastoid from the brain is thick; in the adult this is reversed, the inner walls are thin and the outer walls are thick, therefore inflammatory conditions of the mastoid are more serious in the adult life than in the child life, because when found in

childhood they tend to gravitate the external surface - pus and blood will tend to get out to the surface, but in the adult life it is opposite.

The important structures in connection with the mastoid process are the lateral sinuses, which are continuous with the inner wall of the mastoid process. The meninges of the brain are separated from the antrum only by a very delicate bone structure. This makes the meningial condition a very serious complication in mastoiditis, or any condition of the mastoid, like erysipelas, or something of that kind.

The Perceptive Apparatus, or the Internal Ear.

Internal to the inner tympanic wall we find a series of bone cavities and a number of canals, which represent the structures that contain the end organs of the auditory nerve. These cavities and canals are of importance as well as the end organs proper, because they represent a series of instruments, in the sense of apparatus to which vibrations are imparted from the middle ear, to be transferred through a fluid medium (the endo and perilymph) to the true end organs of hearing, the cotti rods. The parts of this perceptive mechanism are;

1. The osseous part of the labyrinth - consisting of a- The vestibule. This represents a small ovoid osseous cavity about one fourth of an inch in diameter, internal to the middle ear wall, communicating with the middle ear by the fenestra ovalis. The anterior portion of the internal vestibular wall has at its lower border a small pit, rounded, into which the minute fibres of the 8th cranial nerve pass through the small openings in the internal wall. On the posterior internal wall we find five foramina that communicate;

a- Through the semicircular canals. These semicircular canals represent three small osseous canals, projecting inward from the posterior part of the vestibule, passing in almost at right angles through the osseous structure, terminating in the dilated ampullae where we find communication established with the general labyrinthine cavity.

b- The cochlea. This lies inferior to the vestibule, establishing communication with the vestibule internal to the promontory. It represents a spiral canal, resembling the form of what is called the snail shell that is why it has the name "cochlea".

Around the axis this spiral curves two and one half times on itself, terminating in the apex pointing outward and forward, the base pointing inward - that is, toward

the internal auditory meatus. Through the canals at the base of the central axis, the blood vessels and the minute filaments of the 8th cranial nerve are distributed to the scales.

In side the tapering spiral we find the terminating spiral ganglia - representing the terminal organ structures of the cochlear branch to the 8th cranial nerve, very small fibres passing through the laminae to the Corti rods.

Now you will see that there are two ways in which you have the connection established with the Corti rods - one direct and one indirect; that is, one within the spiral canal proper, and another through the wall of the spiral, giving us the double connection, the purpose is compensatory, so if there is an interference with the structural integrity of the inner wall of the canal, the wall will be able at least to discharge a part of its function. In other words, all through this organ of hearing you have a sort of double compensatory purpose, the superficial and the deep.

2. The membranous portion of the labyrinth.

This consists of a number of fibre membranous sacs (that is, fibres in connection with membrane) and tubes, filled with endolymph. These membranous structures represent a loose lining membrane to the osseous labyrinth it is a labyrinth inside of a labyrinth.

The two labyrinthine structures, the osseous and the membranous, are separated from each other by perilymph, hence, we have two independent labyrinths, with two separate fluids, the pressure may also be independent of each other and there you have the same idea of compensation. You have a lining membrane that is in itself independent, separated from the inner structure by a lymphatic fluid, so that you have a really a structure within a structure. The sound vibrations are transmitted through the fluid; there you have a compensatory idea, transmitted through either one or both, the endo and perilymph being the media in either case. The parts of this membranous labyrinth are.

a- The utricle - representing an oblong pouch constituting the greater of the vestibule filling the posterior portion of the osseous vestibular labyrinth. Inside the utricle we find what is called macula acustica, with a specialized series of protoplasmic cilia, representing the terminal organ receivers of the delicate fibres of the 8 cranial nerve.

b- The saccule - represents the rounded pouch lying inferior to the utricle, close to the entrance of the cochlea, also containing a macula acustica for the purpose of receiving the minute nerve filaments of the 8 cranial nerve.

c- The membranous semicircular canal - These correspond with the osseous canals, the membrane lining the osseous cavity, and being continuous with the membrane of the utricle. In the ampullae we find the *aristae acusticae*, corresponding with the macula in the utricle and saccula, and representing the terminal organ for receiving the minute filaments of the 8 cranial nerve.

d- *Scala Media* represents triangular membranous canal passing along the entire length of the spiral cavity of the cochlea. This scala is a subdivision of the *scala vestibula*, and is formed from the membranous wall of the spiral canal, and also from the *Russner* membrane. On this basilar membrane we find the *Corti* rods, which represent a series of polymorphous cells, originally formed by the development of two separate rows of columnar cells, the cells being separated at their base and slanting towards each other at the apex until they unite in the formation of an arch structure, in which we find the *Corti* tunnel. On either side of this arch we find a series of neuro epithelial structures, out of which the cilia project towards the centre of the canal, the canal being filled with fluid, and the cilia projecting into the fluid. This fluid is the fluid that picks up and transmits the sound vibrations, and these cilia are the receptive portions of the *Corti* apparatus.

Beyond this series of modified cells, the cells gradually blend into endothelial structure of the basilar membrane.

In connection with the spiral ganglia, minute nerve filaments pass towards the cilia, passing through delicate openings in the osseous spiral lamina. Now you have here the same point that we had before the compensatory idea you have the spiral structure, and then you have the connection with the osseous and membranous structure. Extending from an epithelial enlargement on the upper portion of the osseous lamina, a membranous *Corti* organ projects outward to the spiral ligaments. In this way the organs of *Corti* are separated in their origin from the rest of the structure of the *scala media*. In other words, the *scala media* is a structure being the terminating apparatus, and the *scala* the protecting apparatus. There is not anything in the whole body organism that is so minutely formed and put together that the eye is cruder compared to the ear, because you have the different rods and cones thrown on top of a membrane without being separated by a membrane, bone and ligament, as you find it in the ear.

3 The blood and nerve supply of the labyrinth

The vestibular and the cochlear branches of the internal auditory artery represent the basis of the blood supply to the internal ear, and anastomosis being established with the tympanic plexus of blood vessels through the internal wall of the tympanic cavity.

Now, there you will see that you have a double blood

supply, the same as in the other portions of the ear, the deep blood supply and the more superficial blood supply, coming through the tympanic cavity, the same as in the inner portion of the ear - nowhere else in the body do we find that with such regularity and minuteness as in the ear.

After the division of the auditory nerve in the internal auditory meatus, the 8 cranial nerve is distributed to the labyrinth in connection with fibres from the two great branches.

1. From the vestibular branch in connection with its three sub branches which send branches to the maculae in the utricle, saccule, and semicircular canals, (maculae small areas which represent sound vibration reception).

2. Through the cochlear branch, which passes through the central axis, terminating in the ganglia spiralis, from which distribution takes place in minute filaments to the ciliated structures of the Corti rods. The function of these neuro epithelial structures is determined in relation to sound vibration. The tympanic membrane receives the sound vibrations from the external ear, transmit the vibrations across the tympanic cavity through the chain of ossicles, setting in vibration the fluid within the labyrinth. This fluid vibration in turn stimulates harmonic mobility in the ciliated structures of the Corti organs.

Now, we use the word "harmonic" there because all of these over and under tones are in harmonies. You have the different sets of the keys in relation to one another and corresponding to certain vibratory musical pitch, harmonic would exclude noises. In other words, you hear a noise with the external ear - when it becomes so intense that it is irritating and annoying the harmonic motility of these cilia in the inner ear excludes the noise altogether. The same people who are said to have no ear for music of any kind, they cannot appreciate the harmony, say it is a brain function and not an ear function - there is the receiving power, but not the stimulus to appreciation in connection with the brain cells. In all of the experimental work they have made in some of these great psychopathic schools they have never found an individual who was not responsive to music.

To indicate another point - we emphasize more than we used to that all of these psychic conditions are educationally - the education of the nervous system is the foundation of psychology; here we have the instrument, but we have not the educational process which makes the instrument responsive to what is going on outside.

From these Corti rods the impulses are transmitted by the fibres of the auditory nerve to the auditory centre in the brain, where we find two or three nervous and mental processes taking place.

The Interpretation of Sound;

There is where you have the ability to understand music when anyone who is untrained hears it - may captivate without the appreciation of sound.

The above covers the field of what is commonly called the perception of sound. That analysis is one that is most overlooked by those who discuss the subject - the average mind or speaker takes sound as synonymous with appreciation, but appreciation would amount to nothing at all unless there was interpretation. You can amuse certain animals by certain sounds, but that only tickles their fancy; other animals have the faculty of interpreting sound. Cited dogs' appreciation of music. following one harmonic variation after another - they have perception of sound; cats as a rule have not. Appreciation of Sound.

This is the foundation of what is commonly called the interpretation of music, and is the basis of coordinative power in the reproduction of music. That is to say, we mean by coordination, what the coordination of the centres of audition with the centres of execution that control the mouth, throat, and any other part concerned in vocalization. The born musician can simply listen to music and pick it up without any of the regular processes that we require to go through.

These are the fundamental points in connection with sound in relation to the ear, and there is no doubt that sound in connection with the auditory apparatus has a therapeutic value - that applies to the suggestive or psychological field. It is a most remarkable thing that the sense of hearing is so responsive to so many things; it is claimed for example, that in certain deaf people the sense of hearing can be stimulated from the tips of the fingers - also mentioned instance where something like a tank was set up in the opera house in front of the stage which was filled with fluid of some sort, and the deaf people put their hands in the fluid of the tank, and by that means could hear the music on the stage.

Lesions - found in cases involving diseases of the ear - found chiefly at the atlas, axis and third cervical, and in the upper dorsal and lower cervical - to the 4th dorsal. The most common lesion is the atlas, and a luxation of the temporo-maxillary articulation, interfering with the subdivisions of the inferior maxillary branch of the 5th cranial nerve. In simple and uncomplicated cases we find contractions of the soft tissues around the upper cervical and at right angles with the jaws. The 5th cranial nerve supplies the external auditory canal in connection with the auriculo-temporal branches, the upper branch sending a sub-division to the tympanum also the Vidian branch of the 5th cranial nerve, subdivisions of the membranous lining at the end of the eustachian tube. This branch can be effected by treatment applied

to the internal throat, particularly when the treatment is given in connection with the secretory glands.

The function of the 5th cranial nerve to the ear is secretory, motor and vasomotor in connection with the secretion of the wax, circulation around the ear and the control of the blood ~~ixax~~ distribution.

In diseases of the ear the 5th nerve is reached, as it is affected by lesions in the cervical region, either directly through the cerebro-spinal system or through the sympathetic system. This is the reason why diseases of the ear are associated with or secondary to nasal catarrh, inflammation of the eye, nose, throat or head. The sympathetic system contains the vasoconstrictor fibres to the ear through the sympathetics. Here we find cervical lesions, particularly in the area of the superior cervical ganglion. Atlas and axis lesions affect the blood supply to and from the ear through the medulla in connection with the vasomotors of the head and ear: we also find vasomotor disturbances in connection with upper dorsal lesions.

The auditory nerve can be inhibited by deep steady pressure opposite and at the level of the 3rd cervical vertebrae. This explains the existence of so many lesions in connection with the 4. cervical vertebrae in ear troubles. The auricular branch of the 10th cranial nerve is also closely connected with the ear through the cervical sympathetics and the 5th cranial nerve: the point at which this connection seems to effect the ear is between the upper end of the superior cervical ganglion and the basi-occiput.

The petrosal ganglion in connection with the 5th and 9th nerves establishes connection between the ear and the upper cervical region through the branches from this ganglion to the superior cervical ganglion: this also explains lesions between the superior cervical ganglion and the basi-occiput posterior to the superior cervical ganglion - that is, this is posterior compared to the auricular branch, which would be anterior in relation to the superior cervical ganglion.

The tympanic branch passes out from the petrosal ganglion sending its fibres to the mucous membrane of the middle ear and the mastoid cells, establishing connection by branches with the sympathetics, and assisting in the formation of the plexus on the carotid within the carotid canal. This explains the relation of the obstructed condition of the carotid to the ear troubles - that is, sometimes we have a very rapid throbbing circulation through the carotid in these ear troubles which would almost indicate heart trouble, without any involvement of the heart.

You will find this a very common condition in the earache in children - take a child with earache that is due to some unexplained cause, and you will find the carotid throbbing as in some high febrile condition: that is the irritation of the carotid through the carotid plexus - in other words, a localized blood ~~circulation~~ ~~condition~~. That same condition would react on the head. In these

paralysis the carotid controls, to some extent at least, the blood circulation to the head. This also would explain the relation of some of the soft tissue lesions in the upper cervical region secondary to ear trouble.

The facial nerve has direct connection with the auditory nerve, and also with the auricular branch of the 10th cranial nerve - hence, any lesion affecting the ear may also affect the 5th, 7th, 8th, 9th, or 10th cranial nerves or vice versa. Any lesions affecting these cranial nerves result in some form of ear trouble; that is where you get the connection, for example, between the tongue and the ear, or bet ween certain parts of the throat, or ear between certain types of goitre, and so on. All of these connections are traced out in that way. In other words, these are not sympathetic conditions, as they are so often supposed to be; they are reflexes through the cranial nerves themselves. That is the intercommunication between one cranial nerve and another, the effect would be vaso-dilation, and that is what we generally find in diseases of the ear. In the vast majority of cases you find dilation, we do not often get constriction unless we get some type of atrophy; as a rule the general tendency is to dilation. We find the same thing in the nose and throat, it is the same condition as in goitre; it is originally in connection with the nuclear root origins of the cranial nerves and is not a sympathetic condition.

A great deal of trouble has been caused in the treatment, both medical and osteopathic, by treating from the stand point of the sympathetic condition - for example, in a great majority of cases it cuts off the possibility of treating it through any of the visceral nerve supply condition, because it is either dilator condition that makes it more difficult to deal with, and that is the point that has not been discussed as it should be, even in the osteopathic field.

The meaning of this is that diseases of the ear may be closely associated with medulla or brain conditions, the ear disturbance taking place through the distribution of the cranial nerves. Now that does not mean that these conditions are incurable. We have the idea handed down to us that, if there is any thing the matter in the brain, it is a hopeless condition; if that were so, the majority of the population would be in a hopeless condition - a great part of headaches are medulla head aches, and many of the patients live to a good old age; asthma is not necessarily a fatal disease. Many people live to old age with asthmatic conditions; in the vast majority of cases it is a medulla condition; the same thing is true of these disturbances of the ear.

You have about five to one ways of reaching the medulla in comparison to the way you have of reaching the upper spinal nerves; the upper spinal nerves pass into the medulla, giving you opportunity to communicate with the medulla - and when we get the point where we use such measures as strong inhibition or vibration, we will be able to reach directly the brain itself, and find the brain more accessible to treatment than the gythims of the brain, but you can use vibration without disturbing the r' this of the brain - the trouble is that when we do use vibration, it is so many horse power that is applied but you have only to get the writings of those Ling people to find out that the most marvelous work they have done is in brain diseases.

Cited book with 300 or 400 cases in which are most remarkable brain diseases, and the treatment given to those cases was largely vibratory - epileptic, hydrocephalic, undeveloped or abnormally developed brains were cured, and we can do as good work as they if we care to do it; we have means of access to the very starting point of the nervous system, and if we do not take advantage of it, it is not because we have not the power, but because we do not want to. Vibration of the brain, if carried to the point of discomfort, would be a bad treatment to give.

In the pathological conditions of the brain every strong vibration is acceptable to the brain, and a good deal depends on the pressure given with the vibration.

It is desirable to use between the strokes of apoplexy; can give it while the patient is in the attack, if you wish. It is cerebral hemorrhage, that is the first treatment to be given; it will cause vasoconstriction, and will prevent clot formation to break it up and diffuse it. It is one of the best treatments that can be given. Of course, with the vibration, you will require to open up the circulation to and from the head, the carotid and vertebral circulation should be kept thoroughly freed.

The principal types of ear disease that are associated with the sympathetic system, are the vasoconstrictors of the vasomotion, are those of a catarrhal type. In these cases the catarrhal inflammation is secondary, extending to the ear from some other portion of the head, nose, throat, etc. That is, those portions that we mentioned before that have the membrane continuity. We also find a possible catarrhal involvement in connection with the visceral organs - for example, the stomach, the intestines, the liver, the spleen, etc. Cited cases of gastric involvement extending back for several years; the breath odor is very marked, and indication of what is taking place in the stomach and principally the

intestines as well. In the case the ears are both very deaf, representing a chronic condition; there you have a reaction from the visceral catarrh in the stomach and intestines.

Another case in which the ears are very seriously involved, secondary to hyperhidrosis - excessive or over-stimulation of the sweat system - the hands, feet, axilla, and the inguinal region are pouring out sweat these glands are enlarged in that particular connection, and you have a hypertrophic condition of the sweat system, and that results in the hyperfunctioning of the sweat system. In that case there was a very strong reaction on the ears and also on the eyes, the reaction taking place through the sympathetic system very marked. One of the most sensitive points in the body was between the coccyx and sacrum, a sympathetic involvement in connection with the sympathetic chain. Has been given spinal treatment by an osteopath for 3 1/2 months, but the cerebro spinal system did not need any stimulation, but needed checking - it was the sympathetic system that required looking after in that particular case - the eye, ear and throat disturbances will go away entirely - neck was so much enlarged, because the lymphatic glandular system is a glandular affection. There was no history of tuberculosis in the family. There are two conditions we want to think about in those conditions. It is not a question to find out what bones are involved, it is a question to find out what system is involved, and that is really where we are going to get the keynote for the treatment - a bone involvement is simply an index leading us to the nerves - to the information as to what nervous system is involved, and we will have a great many more successes in treatment and fewer failures when we come to the point of finding out first that standpoint, and not because of the particular lesions involved in the case.

TREATMENT OF THE EAR

In the treatment of the ear nearly all conditions call for general treatment. Among the points to be emphasized in a general way, are ;

1. The removal of the bony lesions, vascular and ligamentous lesions;
2. The stimulation of the general circulation in such a way as to establish normal circulatory conditions between the head and the trunk of the body (that is, taking the head as a whole field, in which the ear is one of the specific parts). This circulatory condition is best dealt with in relation to the ears -
 - a- By making the patient open the mouth against resistance, applied by strong pressure at the

inferior maxilla.

This treatment relaxes the temporo maxillary articulation, and lessens tension that tends to obstruct the circulation of the blood.

- b- Treatment of the neck, so as to relax the soft tissues, articulation to the cervical vertebrae, both the carotid and the vertebral
- 5- Particular attention is to be paid to the cerebro spinal and the vasomotor nervous system. These are reached, for the vasomotors, in the upper dorsal, the cerebro spinal, in the suboccipital, and articulation of the subocciput and at atlas, and the articulation of the 2-3 and the 3-4 vertebrae
- 4- In those cases in which the lining membrane is involved, the internal treatment of the throat and the back part of the mouth, particularly manipulation around the opening of the eustachian tube, in order to stimulate the functional action of the 5. cranial nerve to assist in freeing the eustachian tube tension.
5. Look out for lesions in the upper cervical, involving 8-10 cranial nerves and the occipital nerves.
6. In all acute catarrhal forms of otitis media manipulate thoroughly all the muscles around the ear downward toward the neck, applying inhibitory pressure and vibration (in succession) over the mastoid process and the insertion of the sternocleidomastoid muscle in the mastoid.
7. In all cases of ear trouble treatment should be given in the upper dorsal region to free the vasomotor supply to the ear. This is particularly applicable in cases of deafness where the deafness is secondary to the catarrhal condition.
8. Give treatment to the auricle of the ear, so as to make it as freely movable as possible. Catch the auricle and pull it down and up and give a rotary movement, gradually increasing the traction of the ear by pulling it outward. In some cases where you have tinnitus, for example, where it is symptomatic, you can overcome it entirely by giving this treatment.
9. Use the hand as a cup over the ear - take the solid hand in a convex position, and lay it right over the ear, and allow it to remain there until you get a suction action, and then pull it

away, you get a suction action from the ear, and where the eustachian tube is involved, make the patient breathe deeply with the mouth closed, and then breathe with the mouth open in succession, while you are giving that treatment, also you can give that cupping treatment to both ears at the same time, whether both ears are involved or not. In case of pain in the ear, that will often relieve the pain; sometimes it will relieve deafness, especially in tension conditions which are associated with deafness.

10. With the finger work as deeply as possible into the ear; grasp the inferior part of the lobule between the finger and thumb of one hand, pull it gently and strongly backward, and then downward to stretch the muscles and free the circulation, and then hold it down at the strongest point of extension while using the finger of the other hand in the ear.

11. Give strong vibration over the ear, and over the superficial area of the gasserian ganglion, then insert the finger in the ear, the little finger is best to use in treating the ear) and when you get it all inserted in the ear, take the finger of the other hand and vibrate so as to set the little finger inserted into the ear in vibration, and so communicate the vibration to the ear. In giving the vibration change the position of the little finger so as to get vibration over the entire field of the cavity of the canal.

The hand vibrations giving the vertical movement gives the hacking movement, and that is what we call vibration; vibration we give with our hands are horizontal vibrations and that is what we give if vibration is called for.

12. In catarrhal and inflammatory conditions of the ear, make the patient inhale deeply for a few seconds, then hold the nose and mouth and make the patient inflate the ear - that is, try to expell the air through the eustachian tube in connection with the ear. This will cause inflation of the tympanic cavity (remember that this is the treatment we mean when we speak afterward of inflation of the ear instead of the inflation of the catheter as is done by medical doctors) It will also stimulate the tympanic membrane and cause the free circulation of the blood away from the ear follow this up by treating downward along the neck to drive the blood away from the head, nose, ear, throat, etc.

If the patient is not able to inflate the ear in this way it will be necessary to use a small blow pipe that is, blow the air right into the ear, and cause the inflation in that way (to open up the tympanic cavity and allow it to work backward and inward and downward

toward the eustachian tube.)

In disease of the ear, where there is an acute condition, treat the patient every day, for example, in chronic cases, treat every second or third day.

Now, these axmpoints which apply to all of the different types of diseases that we have in connection with the ear.

In diseases of the Internal Ear, the most serious condition that has to be dealt with is that of Anemia and Hyperemia.

1. In anemia of the labyrinth, give the patient thorough constitutional treatment, and make the patient take plenty of outdoor exercise and eat plenty of nourishing food. (Not overeat, but eat plenty of food that is easily assimilated).

2. In hyperemia, keep the patient from over-exercising, and stimulate strongly elimination from the kidneys, intestines; sweating process, etc. Stimulate sweating by osteopathic treatment, hot water baths, vapor baths, or any treatment applicable under the circumstances. Put the patient on a restricted diet (diminish proteid and increase the carbe hydrates) to keep the blood active, and in that way you would tend to increase the elimination of the body, if you increase the carbohydrates you would cause the patient to sweat more, and that would increase elimination. Eliminate entirely all stimulants from the food.

The Middle Ear. (Myringitis, inflammation of the membranes of the middle ear.

1. In this case attend to the circulation of the blood away from the ear.

2. Syringe the ear with warm water, if there is no infective process, if there is infection, syringe the ear with some antiseptic solution, in order to get rid of the infection, and after syringing the ear put in a little plug or absorbent cotton. The best antiseptic where there is infective process with inflammation, is carbolic acid & 1 in 40% solution.

Now the advantage there is in carbolic acid solution is that it has an anaesthetic affect - that is, it checks pain, and thus helping to enter the blood circulation - as a strict germicide, alphozene might be called for.

If ulceration takes place use the warm boracic acid solution or a warm peroxide of hydrogen solution or alphozene; in using alphozene do not use it warm - it gives its best action when not heated in any way.

(Where the fungus forms in the alphozene it is the degeneration of the starch when it is put up in tablet form - the proper way to keep alphozene

is to let it dissolve, and let the starch go to the bottom, throw away the starch and there will be no fungoid growth at all; it will take a week or two if you take the precaution to drain off and throw the starch away.

3. If abscesses develop these may be evacuated by incision. In making incisions care must be taken not to produce rupture in connection with the membrane, and to prevent any possibility of infection taking place. In order to evacuate entirely the abscess matter, inflation of the tympanic cavity may be resorted to; that is, to drive it all from the inside to the outside. The principal point here is that the inflation is not too great so as to cause the rupture of the membrane.

In Eustachian Salpingitis, the first point in the treatment is;

1. Stimulate the circulation of the blood away from the head and ear.
2. Inflation of the tympanic cavity - this may be done by two known processes;
 - a By what is called catheterization - or
 - b By the air bag.

If the stenosis becomes extreme, then a sound may be used in connection with the catheter - inserted into the eustachian tube, gradually pushing up the sound through the canal until the obstruction is passed; in severe cases sounds gradually increasing in size may be used until sufficient dilation is secured to allow inflation of the tympanic cavity. Some practitioners use what is called vaporized ether or alcohol.

3. Keep nose pharynx free from congestion, after any catarrhal involvement. What, of course, will throw us over to the treating of catarrh, found in the later discussion of the treatment of the nose.

The congested condition of the nose pharynx is dealt with through the nerve and blood supply and a general treatment for the catarrhal condition. If the congestion becomes severe the use of warm distilled water or an astringent of some kind may be used - for example, 1 to 1000 solution of adnephria (extract of adrenal bodies) adnephria is better for hemorrhage than adrenalin, used to produce contraction, controlling hemorrhage in that way.

4. If there is an adenoid or an enlarged turbinate or syphilitic deformities. These require to be dealt with from the surgical standpoint.

OTITIS MEDIA

In the acute type the patient should be kept in bed

to keep the blood circulation down at its minimum, so as to keep the pressure of the blood as low as possible

1. Treat to control the pain. The sensory region for the eyes, nose, ears and head are located in the upper cervical region to the upper five cervical.

Keep the blood well away from the head by treatment downward along the spine. In some cases where the pain is intense, due to congestive conditions, dry heat may be used locally, and at the back of the head and neck.

2. If the nasal cavity is obstructed, use warm water or warm alkaline solution and if there is considerable irritation use some form of oil in order to get the action of the oil, and make sure in this case that the oil is pure - pure olive oil is the best.

3. If there is inflammation involving the nose pharynx, and retraction of the tympanic membrane, use the inflation of the tympanic cavity as a means of overcoming the tension, and forcing the blood out into free circulation.

4. If there is infection, use the syringe with a warm antiseptic solution, for example, 1 in 40 carbolic acid, particularly if there is pain, because of the anaesthetic affect of the carbolic acid, in that proportion alphonone may also be used as an antiseptic.

5. If it is necessary to open in order to evacuate the sero hemorrhagic accumulation, make an incision in the postero inferior portion of the membrane, or at the point indicated by the bluing in the case of abscess, then pack the canal with absorbent cotton or gauze so as to pick up the ear from infection. Remove this packing at least once a day, and syringe out so as to cleanse the entire field, using an antiseptic solution.

If there is retention of secretion, or solidification of accumulated matter use a warm hydrogen peroxide solution. When resolution begins to take place, use inflation of the tympanic cavity to keep the membrane from retracting, or from becoming adherent internally. You have a mucilaginous secretion inside the cavity, and if it is allowed to remain there it is liable to become adherent.

In the chronic type we have always a naso-pharyngeal condition - hence the treatment is;

1. Nasal respiration - if necessary use means sometimes to keep mouth closed, for the purpose of forcing respiration through the nose. You can do that in any way - a bandage around the head, or a sponge in the mouth, or any simple way, to force the patient to breathe through the nose.

2. Attend to the constitutional conditions;

3. Keep down congestion and hypertrophy by circulatory treatment;

4. When the mucous membrane becomes thickened sufficiently to cause obstruction, use the warm water injection by the catheter method, or vaporized alcohol, or what is very commonly used in these cases, ethyl iodid, but I do not think it necessary to use that unless there is much obstruction, and it is a question whether it would not be better to operate on the case.

5. Use the internal aural massage with the fingers, and, if necessary, with the vibratile apparatus that is commonly used to give the internal ear massage; this massage is to cause mobility of the ossicles, and to prevent adhesion. This is particularly indicated in hyperplastic type ears being taken not to give the massage too long or too strong. Inflation may also be used to draw the blood away and prevent adhesion.

PURULENT OTITIS MEDIA.

In the acute form (1) keep the blood thoroughly circulated away from the ear; that you do by general treatment in the basi occipital region and down along the side of the neck - rhythmic or alternate treatment.

If the inflammatory process and congestion becomes very intense it may be necessary to make an incision sometimes in connection with the ear you have to make incisions more freely than in any other portion of the body on account of the proximity of the brain, and the rapidity with which the inflammatory processes go to the brain from the ear.

The determination as to whether the incision would be necessary or not is the intense bulging out of the part as if it were going to break on account of the pressure, and at the same time the patient would have high febrile condition and delirium.

There are some people that have an erysipelatous system that where you have otitis media you are liable to have erysipilas coming to the surface.

3. To control the purulent type use dry heat in connection with cold (not ice cold, but cold,

5. Syringe the ear out with a warm antiseptic solution so as to cleanse the ear, and also for soothing in connection with pain (of pressure, for example).

4. Attend to the general constitutional condition of the patient - if the patient is in bed, through circulatory treatment.

5. If the membrane shows the presence of pus by bulging out at the proper time, incision should be made

at the point of bulging; to determine the time for operation in this purulent condition is by fluctuation - that is the surgical rule. In the ear the point to watch for is the dropping of the temperature, because it is a symptom of absorption or rupture; the proper time really is before the fall of temperature, if you can get the fluctuation.

Following the incision syringe the canal with antiseptic solution, and if necessary use inflation to drive out all the pus, from within out. Some of the aural surgeons use suction in the external meatus to pull the discharge out from the cavity, then attend to the packing with gauze or absorbent cotton, drainage, etc., as in any surgical wound.

In the Chronic Type - The main point is through drainage and perfect cleansing, using the syringe as in the previous case. In this case it is necessary to use not only the strict antiseptic solution, but a germicidal solution, in order to prevent infective processes. If the discharge is not thoroughly removed inflation may be used, as in the previous method. If there is an excessive amount of discharge use the regular means of clearing out the secretion, and also the boric acid alcohol solution in connection with gauze inserted into the cavity, the object being to keep the surface moist. If the discharge is scanty, instead of using the moist method use the dry form of powder, for example, alphoxone in powder form, or boric acid and alum combined together, astringent and antiseptic. In the place of the suppurative process here you would have scalding, and the alum has the action of lessening inflammatory condition. Take for example a burn produced by hot water or blister - cover that over with alum, and it will take the heat out - has practically the same action as bicarbonate of soda.

PROUD FLESH

The best thing to control proud flesh anywhere, sugar powdered down as fine as you can make it - that will eat away the proud flesh, and will heal afterward. It is better to use a simple thing than a complex one, if you can. Neither granulated sugar nor confectioners sugar is strong enough; the best is lump sugar, where you get it pure; a great deal of powdered sugar is adulterated, saccharin will do.

2. If granulation or polypoid growths are present; if these are small, use boric alcohol solution; if they are large, the only way to pull them out, is from the surgical standpoint; remove them by curette, hook knife or any other surgical method.

3. If necrosis develops, you require to get the necrosed substance out by the use of hydrogen peroxide, or better still, the iodoform alcohol solution, or in some other cases by the use of the surgical curette. In

some cases where the necrosis is extensive it is necessary to remove the necrosed bone to keep it from developing further where necrosis is present, you get the typical odor of degenerated tissue.

4. If perforations are found persisting after the discharge, in some cases where the perforations are small spontaneous closure will take place - in other cases it is necessary to irritate the edges of the perforation to cause adhesion and proliferation; that irritation can take place by means of say the curette, for example, or some substance that may be used to make the edges fresh, as it is called. The common substance used in that field is nitrate of silver. In some cases where there is a large perforation or a rupture of the membrane, an artificial membrane is provided, a rubber membrane inserted right into the ear.

INFLAMMATION OF THE MASTOID.

1. In the early stages of this condition the inflammatory process can be absorbed by treatment, particular attention being paid to the circulation of the blood and the cerebro spinal fluid. In these cases it is well to keep the patient lying down to keep the circulation as even and uniform as possible without increasing the pressure.

2. If it goes on to suppuration, look for bulging of the tympanic membrane - in this case incision of the membrane so as to let out the accumulation of fluid within the tympanic cavity will relieve the condition; we would have a condition that is tending to get to external ear.

3. If the inflammatory process becomes intense, use a the ice pack to keep down the inflammation, applied locally; if this is not sufficient to control the inflammatory process, then --

4. It is necessary to have recourse to a surgical operation. In making an incision make a semi circular incision through the surface tissues, beginning about three fourths of an inch from the attachments of the auricle of the ear. In most cases this will relieve the pressure, and it will not be necessary to do anything more than to simply leave the open incision, using the gauze dressing so as to absorb the excretions that are thrown out, and get a removal in that way.

If the mastoid is deeply involved, or if there is a purulent condition, then it will be necessary to open the mastoid and allow the contents to pass out. After

making the semi circular incision through the surface tissues, extending around to the tip of the mastoid, separate the surface tissues from the deeper structures, dissect the periosteum from the bone and hold the exposed bone open by using retractors, in order that you may examine the surface of the bone. The point you are looking for primarily is an area of necrosis, or a point bulging - that is, the accumulated contents inside are trying to get out - or a fistulous opening.

In the first case, that is where there is necrosed area, make an incision so as to let out the contents underneath;

If the mastoid seems to be in a healthy condition, then you can use the osseous instrument that is used for removing a part of the bone; use a trephining apparatus in the proximity of the antrum, just below the line of the superior wall of the meatus; when the antrum is exposed, then you will be able to determine what is the mastoid itself. In some cases it is necessary to remove the entire mastoid surface so as to get out the accumulation of substance that is within, then pack the mastoid with gauze and establish drainage, and allow it to heal up in the regular way. The principal point of difficulty that is involved in the mastoid portion is secondary involvement of the lateral sinus, or sometimes to have an involvement of the facial nerve, and sometimes the absorption of the exudate, either pus or sero sanguineous fluid into the cavity itself, these can be obviated by care of drainage.

The only other condition we have in the middle ear that we have not discussed is the Traumatic Condition of the Middle Ear. In most cases these will heal up spontaneously if kept in an antiseptic condition. The main point to look after is to prevent infection and inflammation - this is done by packing the ear thoroughly with gauze of absorbent cotton so as to prevent the entrance of infection; if anything does develop it is an inflammatory process, it is a type of otitis media, and must be dealt with from the otitis media standpoint.

DISEASES OF THE EXTERNAL EAR

Perichondritis.

The main point is to relieve the inflammatory process by the use of cold compresses and keeping up the circulation of the blood to and from the ear by the general treatment before mentioned.

In Diffused External Otitis - there are different degrees of this condition;

In the middle type, general circulatory treatment and the ordinary antiseptic precautions are all that are necessary the a warm antiseptic solution, if the pain is intense.

1. Try to control and check the pain. This applies principally to the 5th cranial nerve. The use of hot antiseptic solution sometimes in intense pain the hot carbolic acid solution - and the use of ice pack, to keep down and prevent infiltration and exudation.

2. If the inflammation does not subside by the use of these means it may be necessary to relieve pressure by an incision into the soft tissues down to the bone. In all uncontrollable inflammation do not make your incision just into the skin and subcutaneous tissues, for the pressure will continue until abscess formation; but make the incision down to the bone, insert gauze for drainage, and the place will cure.

3. If granulation tissue is found, use the boric alcohol solution, or powdered sugar, or the electric cautery, to remove the granulations. The electric cautery gives instantaneous removal of tissues, without hemorrhage, and no connective cicatricial formation.

Acute Circumscribed Otitis -

The most difficult thing to control is pain, caused by infiltration of tissue, and a consequent distention. Use here the warm carbolic acid solution, and treat to control pain as before mentioned.

2. If the inflammation does not subside, make an incision into the infiltrated portion, so as to relieve the pressure and pain, and keep open by using gauze, so that all pus may be evacuated.

3. Keep the external auditory canal thoroughly cleansed and packed easily with gauze for drainage.

Otomycoosis-

The main points are cleanliness and cleansing - antiseptic precaution and anti parasitic precautions using any substance having any anti parasitic power. Here a weak solution of bichlorid of mercury might be used.

Syphilis of the External Ear

1. Give the constitutional treatment, which, of course, takes the syphilitic condition in general.

2. Local antiseptic measures - for example, in those syphilitic ulcers or sweating area, as they are sometimes called. The best thing to do is to keep them dry, and to use powder, boric acid or alphozone powder, to keep them dry. One reason why in syphilitic sores they destroy tissue is, that the continual washing of the different solutions which wash out not only the foreign bodies or substance, but the good tissue, leaving the pit behind - deal with it in the dry method, dry powder

of some kind.

In the case of foreign bodies in the ear, the method of removal will depend upon the foreign body.

1. If the foreign body is solid, so that it will not absorb fluid, the best method of removal is the use of a syringe with a warm antiseptic solution - use freely, get the fluid inserted back of the foreign body, following with inflation of the tympanic cavity so as to try to force the fluid you have driven in out again, bring with it the foreign body. If there is inflammation of the ear in connection with the foreign body use the cold compress, and if the internal portion of the ear becomes enlarged, you can use the syringe with ice cold water, throwing in a stream of ice cold water so as to contract the dilated or expanded wall of the meatus;

2. If these means are not sufficient, the ear forceps or the loop may be used, inserting these behind the body, and then extracting in the usual way by pulling outward. The loop is most commonly used, and more applicable. It is a minute wire which can be inserted between the foreign body and the wall of the tympanic cavity.

3. If these methods are not sufficient, it is necessary to remove by surgical operation - here we have a series of operative measures;

a Separating the inner part of the auricle and the cartilagenous walls from their attachments;

b Separating the osseous structure from the posterior wall, so that the cartilagenous canal can be pulled outward.

c In case of impaction of the foreign body it will require to be chiseled out.

4. In the case of pressure of insects in the ear - sometimes you can get these out without any difficulty by closing the ear, and preventing the passage of the air, so that you will produce in the insect semi-suffocating and the insect will naturally gravitate towards the air to get oxygen.

In some cases you will kill the insect in that way in other cases, where the insect seems to have a persisting vitality, the best way to do is to inject oil of turpenthine; then when the insect is killed you can use the regular methods of swabbing out, with the use of the ear shovel to go in and curette out.

1. In ceruminous impaction of the ear, the best method in the general cases is the forcible syringing of the ear with a warm antiseptic solution, throwing the current of fluid in with some force against the wall, so as to make a line of separation between the wall and the wax; then you can get the wax massed in such a

form that it can be taken out as a foreign body by the use of a hook.

2. In the persistent cases of ear wax accumulation, the ear curette is required to be used, care being taken to prevent any injury to the mental walls.

3. In the case of irritation following the removal of the ceruminous mass, use boric acid powder or solution to wash out the wall of the mental cavity.

In Sebaceous Cyst- use the local anaesthetic, and then dissect out the cyst; be careful to dissect out all of the sac. In the majority of these cases, the sac and its contents can be thoroughly evacuated without making any incision into the sac. The old method was to treat this from the surgical standpoint, or to make the incision and let out its contents, and then leave the sac in, or use some caustic to get out the sac wall; that, however, is a bad method of doing, whether located in the ear or any other portion of the body; the cyst should be dissected out and removed in together again, but that does not prevent them from growing again. That is the trouble with the caustic - if there is any portion of the sac wall left it is liable to grow again; that is true of cystic sacculation anywhere in the body.

In Hematoma - The situation can sometimes be controlled by ice applications, driving out the blood and compelling it to become absorbed; in this case there is no sac to pay attention to; If the ice method is not successful, the only method to follow is by incision and causing evacuation of the contents of the cyst.

A cyst is an abnormal cavity formation containing fluid, either blood or other fluid.

A hematoma is blood occupying spaces in the tissues without any special wall formation to keep it in its location; that is a healing process; that is to say, a process to keep it encysted so as not to allow it extend any further.

Hematin - localized

Extravasation - diffused;

Ovarian cyst - clear secretion - always non infective

In the case of mal formation - the only applicable method is a surgical treatment to correct the mal or deformation.

In the Eczema of the Ear

1. To deal with a case required that it be treated constitutionally;

2. There is always some local cause or condition representing irritation, obstruction or interference of some kind with the nervous system. This localized condition requires to be looked after particularly.

The local condition of eczema is really a nontrophic

not an atropic condition - there is some disturbance or interference with the local trophic distribution - of course, back of that is the constitutional condition. The probability is that in the majority of cases it is a toxic condition that is the exciting cause, or it may be functional disturbance. The hygienic condition also has a great deal to do with this condition, and there is one point that is not attended to as much as it ought to be, and that is the use of water in connection with the skin we have some fashions that have been introduced by so called civilization peculiar to the toilet. A bird washes itself and gets out into the sun to dry it does not take a big towel and rub.

Eczema is sometimes caused by rubbing the skin the right way is simply to mop it instead- the common idea seems to be that we get a rough surface and stir up the circulation and heat, etc. that ought to be here. The body is dry, and not when it is wet or moist. Rubbing irritates, and you have the first condition that makes for example, eczema worse in winter than in summer. That is the general rule that is laid down is to keep the excruciating portion as dry as possible. Powder is permissible if you use it on a dry surface. As far as powder is concerned, any of the more simple powders are applicable - cornstarch is as good as talcum powder in connection with the particular conditions that are developed in the body.

The application locally for soothing and protective purposes as well as for the removal of the incrustation, is some form of oil; the incrustation represents the drying process, and the application of oil is lubricating, etc. Any kind of oil - the purest - the olive oil, for example, is best, most simple and advantageous, and can be used under practically any circumstances. Pure vaselin is also good.

N O S E

The diseases of the nose may be primary or secondary. The sense of smell may be impaired, or we may find some form of nasal obstruction, in the latter case there is a retention of secretion with resultant congestion and inflammatory conditions. The secretions that are found normally in the fermentation process in connection with the presence of microorganisms, also putrefactive processes. In this case we have the offensive odors that are sometimes developed in connection with some of the types of nasal disease.

In the secondary conditions, the primary condition is almost always associated with some part of the respiratory system. This brings out some of the most marked symptoms and physical changes that we find in nasal diseases, for example, the breathing through

the mouth, instead of through the nose results in changes in appearance of the face, change in character of the voice, sometimes interference with the mastication process, also interference with the respiratory process as a whole, due to the alteration in the amount of air which passes from the upper to the lower respiratory system, i.e. down into the lungs and pulmonary system. The result of this is to modify the pressure conditions; sometimes to alter the application of the law of partial pressure so as to produce apparent asthmatic conditions. This latter condition takes place as a kind of compensatory process, that is, to compensate for the inability or insufficiency of upper respiratory apparatus to keep pace with the demands of the lower respiratory apparatus (the intruding of gases between the two fields).

In children we find very commonly as a result of this, deformities in the nose (not necessarily in the external contour of the nose, but chiefly in the internal ear passages). Also sometimes deformities in the face or chest—for example, we have what is called the chicken breast, the sides of the sternum depressed and the transverse diameter decreased, and the sternal prominence projected out, that is not an uncommon condition you find in children in connection with nasal diseases, and also involving the vocalization apparatus. To get perfect vocalization you require to get resonance in connection with these cavities, in order to get the resonant response to the different tension of the vocal cord.

Some claim the resonating apparatus is located in the throat and chest; others, in the head, throat, pharynx and even the ears are included from the medical and anatomical side. You have perfect anatomical conditions of the cavities, these are of great importance in the musical field.

There are certain changes found due to anatomical conditions, the nose from the anatomical side, representing a series of open spaces, more or less elongated.

Now the same point applies here as formerly in connection with the ear, must note so that in connection with the eye, that is, these different cavities are really found in duplicate form. We have the osseous and cartilagenous cavity, and that we have lining that the mucous membrane cavity - it is a cavity within a cavity, and both of these are essential where, for example, you have the congested thickened mucous membrane, you have a peculiar condition in the ear and in the nose both in respect to hearing and smell, which you find in any other portion of the body - that is always borne out by the compensatory nerve and blood supply that we find in the series of cavities, and that means a great deal of assistance both from the nerve and blood side in attempting to cure catarrh of the nose, just as we find it in inflammatory processes of the ear.

This is one reason why inflammatory conditions such

as we find, for example, in hay fever, represent such complex conditions.

Now what we mean by that is, that it is said by some that hay fever comes at certain season, and is caused by pollen from ragweed, and dust or sand from the street, etc, that is only the outer fringes of the subject; that is the exciting cause we in connection with the mucous membrane - back of that you have the neurosis which involves not only the structure of the membrane, but also the nerve and blood supply to the bone and cartilage. That explains why, in the intensity of hay fever, you have secondary brain conditions, and other aggravated conditions so far as the comfort of the patient is concerned. That makes it much more complicated, but we will find from the treatment standpoint that it is much more easily controlled in that way, because we have the double means of getting at the single condition, treating both from the internal and external sides.

Most of the nasal diseases conditions are associated with changes in the mucous membrane; this is probably due to the fact that there is a large blood supply, tending to produce, in the static conditions, exudation, the exudate forming a mucoid discharge. This mucoid substance is difficult to remove on account of its mucilaginous nature. Degenerative changes of the putrefactive type take place on account of the constant passage of air containing the different forms of micro organisms, and if the secretory condition continues, we have what is called a moist catarrh. If the secretion is more or less suspended on account of obstruction of the blood circulation then we have the dry catarrh, with crust formation, and the development of sores as the dry crust is removed from the membrane, leaving the uncovered mucous membrane in the form of sores.

In the former (moist type) there is a continued presence of degenerating secretion, accounting for the peculiarly odorous condition of nasal catarrh of this type. In the latter case (dry type) there is tendency to suspension of secretion all over the nose pharyngeal mucous membrane, the development taking place by the continuity of the membrane; this means that the vascularity of the membrane is really the primary cause of the development of the majority of the symptoms in nasal catarrh - for example, epistaxes in a mild or more persistent form, according to the different conditions that we find, as the blood vessels are very richly supplied with the nerves. These blood vessels are very liable to be contracted or dilated by reflex action.

Another symptom that we find is chilliness, either general or local, especially in the extremities, followed by congestion of the nasal mucous membrane, that is due to stagnation of the blood circulation, reacting on the general or local blood system through the vasomotor system.

In all cases of nasal catarrh there is a tendency to hemorrhage on account of a large blood supply and the neurotic condition of the mucous membrane. This accounts for the irritation produced by poisonous odors, dust, seed of some kinds given off by some flowers, weeds, etc. In some cases the wind itself causes a local irritation the irritation may also be due to polypoid or adenoid development in the nasal membrane. The most important development in the nasal membrane. The most important factor in the neurotic condition of the nasal mucous membrane is the fact that the nasal nerve supply (sensory) is directly connected with the medulla (without the intermediate reflex action.) The effect in the peripheral nasal irritation therefore, is felt directly in the medulla centres, and reflexly through the 10th cranial nerve (that is, through the distribution of the 10th cranial nerve in the mouth, throat, wherever the 10th cranial nerve is distributed) for example, unpleasant odors may produce nausea and vomiting; severe nasal catarrh conditions may give rise to sufficient irritation of the gastric mucous membrane to develop a gastric catarrh also asthmatic conditions developed reflexly in the lining membrane of the respiratory apparatus or in the air cells, reflex irritation taking place through the pulmonary branches of the 10th cranial nerve. You can trace out the same condition with other organs, you have not an infrequent condition, for example, in many types of nasal catarrh that is an irritant of the bladder - that is to be traced undoubtedly through the distribution of the nerve supply to the lining membrane of the bladder, giving a reflex action from the mucous membrane in the nasal cavity. You have a similar condition of connection in many cases between nasal catarrh and ovaries.

(Cited case of close connection between a nasal catarrh and ovaries - so much so that sneezing, even though the patient was absolutely passive, set up an ovarian neuralgia showing the irritation from the mucous membrane to the structure of the ovaries. The old explanation of that of course was the so called catarrhal diathesis - that is like a great many other things. The catarrhal diathesis was a fiction, invented for explaining ignorance instead of explaining why one portion of the body was affected by catarrh, in another part of the body they fell back on the catarrhal diathesis. The neurotic condition is one that you must race out in some sensible way through the nervous system; if there was a catarrhal diathesis, you would find it involving any and every mucous membrane of the body, but such cases are rare you get catarrh localized in the different parts of the body, and no doubt there is a reflex between the conditions. That is a more physiological explanation than the catarrhal diathesis. You have frequently the reflex condition of the nasal catarrh in urithritis, but it would be difficult to trace the continuity - it is a reflex, that is really the

explanation.

The morbid processes that we find in connection with nasal diseases are indications of general infection, degeneration of structure, functional incoordination - for example, in asthma, secondary to nasal catarrh, structural deformities, as in pigeon chest, acute inflammatory processes such as we find for example, in some of the exanthematous conditions secondary to the nasal catarrh.

The most typical symptom is an acute inflammation, with an infiltration and thickening of the membrane, followed by obstruction of the nasal passage, abundance of purulent secretion, either in the moist form or in the dry crustation,

In some cases we require to trace these conditions back to other diseases - for example, Bright's disease often gives a secondary catarrhal inflammation, and later suppurates.

Another marked symptom is distress in breathing, brought out particularly in connection with the thickening of the mucous membrane.

In the croupous and diphtheritic types we find febrile temperature, with a membranous formation. Now whether that is simply an exudate organized, or whether it is the result of a germ condition, is not a matter of great importance. Some writers think there are webs woven, just like spider webs - it is to be dealt with from the necrotic condition, not deal with the membrane itself.

The other symptoms of importance are chilliness and rigor, either together or in alternation or in succession. These are indications especially of a suppurative process in connection with the mucous membrane (nasal). Sometimes also they are found in connection with febrile conditions such as the nasal catarrh associated with glanders, diphtheria.

In all nasal catarrhal conditions there is a tendency to pus formation, this is accounted for by the exudative process, secondary to the static condition of the blood. The pain that is found in the catarrhal conditions are more or less diffuse or indefinite, particularly in the dry catarrhal types. It is most severe where the catarrhal conditions develop obstruction in the nasal passage; that is to say, nasal catarrh develops something analogous to a foreign body is the cause of the intense pain - that is secondary condition.

Pain is also developed quite intense in connection with frontal sinus, especially where the inflammatory

process is quite intense. When we find pain in connection with the cheek or side of the face - here the inflammatory process seems to involve the antrum. We also find pain radiating to the ear in nasal catarrh, indicating the involvement of the ear through the eustachian tube.

Another condition is partial or complete loss of the sense of smell, found particularly in inflammation or obstruction types, and caused by changes in the mucous membrane, or secondarily changes in the olfactory nerves or their centers in the brain.

Sometimes we have the development of an abnormal odor in a simple catarrh, or in catarrh associated with psychic or mental conditions. This loss of the sense of smell is generally associated with a primary dryness found in the early stages of acute nasal catarrh sometimes it is secondary to obstruction; the feeling of pressure, fullness in the nasal and frontal sinus regions accompanying the loss of the sense of smell.

Deafness, as a nasal symptom, indicates the involvement of the eustachian tube. The passage of the discharge in case of nasal catarrh into the pharynx or larynx may form exciting causes of irritation resulting in laryngitis, pharyngitis, or of a simple reflex cough associated with sneezing - for example, in some stages of nasal catarrh.

Sometimes the external appearance of the nose and face is of special significance in determining the condition - for example, the deformity that is found in myxedema, the lateralism in the contour of the nose and face in the necrosis of the bone. In the syphilitic type of nasal catarrh, the smooth glossy condition external of the bridge of the nose and of the sides of the face in Bright's disease.

Examination of the Nose

1. The internal Examination - we first make an examination anteriorly. In making this examination it is necessary to have the nasal speculum, the nasal sound or probe, and the head mirror; these are the apparatus necessary. The speculum is used to provide the uniform central opening of the nasal passage, and to throw sufficient light into the nose for examination. In some cases it is necessary to use cocaine, on account of the intense sensitiveness of the mucous membrane in probing, etc., that must take place.

Place the patient so as to face the one making the examination and so that the light falls from behind and from one side about the level of the nose itself; then bend the head of the patient forward, adjusting the head mirror so that the nasal opening is directly in front of the eyes, the light falling in from the front and sideways into the cavity of the patient's nose; then take the nasal speculum in one hand, and insert it into the nasal cavity, beginning to examine from before backward, throwing the light onto each part of the internal nose by the use of the mirror, reflecting the light into the nose. As you examine backward in the nasal cavity gradually throw the head and shoulders of the backward so that you can make the examination of the membrane, turbinates, etc., using the probe or sound to determine the different portions investigated, particularly for the presence of polypoid growths in the nose.

In making an examination of the posterior nares, it is necessary to examine the nose through the mouth of the patient. In this case it is necessary to have an apparatus, the tongue depressor, the head and the throat mirror, the palate hook or tenaculum, in order to hold the soft palate; also what is called the curved applicator for the purpose of introducing and applying cocaine to produce anaesthesia, if it is necessary to probe or sound the posterior nares place the patient in the same position as before, with the head slightly down, then press down the tongue by using the depressor, throw the light directly into the pharynx by means of the head mirror, then insert the throat mirror gently behind the soft palate, holding the handle of the mirror well up so that you can examine the vault of the pharynx, then gradually depress the handle, and then turn the handle from one side to the other for the purpose of examining the entrance into the eustachian tube.

There are many forms of the throat mirror, the simplest form is a little mirror like that used by dentists.

If the mouth and throat are sensitive it is necessary to anaesthetize (ether chloride) the soft palate before applying the hook, in case

cases the posterior nares can be examined without using the tenaculum, by making the patient breathe in short, quick, gasping respirations; in other words, that will make *thauvula mova* gently as the short and quick respirations take place, if this is not possible it will be necessary to grasp the uvula for the examination.

In the regular breathing the structures of the pharynx are so placed that with the use of the instruments it is impossible to determine the conditions - hence, the probe, sound or hook must be applied to each part of the structure to determine the condition. The probe is necessary to apply pressure lightly against the posterior wall of the pharynx to determine the nature of the discharge, if there is any, also to determine if there are any conditions of ulcer, thickening of the mucous membrane, etc. It is also used when tumors, polypi or nodules are found on the mucous membrane. The fingers can also be used to palpate these abnormal growths, or to determine the nature of suppurations, particularly if the turbinates are involved. In all cases it is necessary to note the color of the mucous membrane - for example the pale color indicates atrophic conditions, tubercular conditions, particularly with the nodules of the rhinitis. The bright red color indicates an acute inflammation such as we find in acute rhinitis, the dull red indicates chronic rhinitis. Ulceration is found secondary to syphilis, lupus, etc. Sometimes the secretion is liquid or semi liquid, sometimes solid. In all of these different conditions it is necessary to extract some of the secretion for examination, microscopic, chemical, etc. In the chronic condition we find a purulent discharge, and in tuberculosis the cavities are filled with a cheesy material.

These are the general points in connection with the general subject of the nose.

ACUTE NASAL CATARRH - synonymus - acute rhinitis - or acute coryza.

Here we have an acute inflammation, *catarrh* in its nature, involving the *Ethmoidian* mucous membrane in connection with the different passages of the nose. The chief characteristics of acute rhinitis are a feeling of fullness in the nasal cavity, discomfort with the sensation of pressure, distention passing behind in connection with the head, attended with nasal discharge and feverishness. Sometimes we find this an independent condition that is, an acute primary form, or it may be found preliminary or premonitory in the early stage of some other disease as measles, influenza.

This is the view taken by some of the writers, who say that acute catarrh is simply a stage of measles or influenza and there are no nasal diseases. This is untrue. This is sometimes a premonitory stage of the measles, but many people have acute rhinitis that do not have measles.

Morbid anatomy. 1. Neurosis of the mucous membrane. 2. Hyperemia of the mucous membrane, caused by the static condition of the blood circulation. This results in a neurotic state of the mucous membrane, infiltration, swelling, imperfect or deficient secretions.

The cycle of secretory changes in acute rhinitis is as follows;

1. Suspension with the secretion associated with the hyperemia and stasis of the blood circulation. In coordination between two nervous systems from secretory side.

2. The presence of a thin, watery secretion, that is the state when the drops begin to drip from the nose. Here we have exudation and infiltration and swollen membranes. There is no distinction between the moist and dry catarrh, it is a cycle, and the dry may be cut off, if you have the chronic condition as a basis for the acute attack; an acute manifestation of underlying chronic condition, representing the dry or first stage.

3. The mucous or mucopurulent secretion - Predominance of lymphatic system very tenacious, accompanied of the disquamation of the epithelium from the nasal membrane and from the nasal csesa.

The most common causes of acute rhinitis are atmospheric changes or previous diseases, odors, gases, etc., exposure; now that may mean exposure to dampness, to moisture as distinguished from dampness, and exposure to severe changes in the weather, very cold or very warm. Among the other causes we have irritating gases, exciting odors, epidemic conditions due to the presence of micro-organisms of almost any type.

Lesions - are found in the 1-2-3 cervical, including contraction of the muscles and other soft tissues, secondary to exposure, e.g. cold, damp, etc. Rigid articulating conditions in the same region. Distinct types of luxation, involving some of these vertebrae, the atlas is a very common lesion in acute rhinitis conditions - an atlas that is liable to change position from time to time. Then there are lesions in the form of contractions of the soft tissue around the neck and along the sides of the face; rigidity at the inferior maxillary, tight articulation of the lower jaw, also lesions in the 7th cervical and first three dorsal regions, either

in the soft tissues or in the articulations, frequently lesions involving the upper two ribs ; the clavicles. Another type of lesion is affecting the trapezius or the sternocleidomastoid muscle. A tight contracture that seems almost an enlargement of these muscles, from a static condition of the blood circulation.

Sometimes rhinitis is secondary to other diseases, for example, diphtheritic and eruptions and eye disturbances, there you will find lesions corresponding to these primary disturbances.

Symptoms - Comes on with feeling of "malaise" this is followed by a sensation of aching, particularly in the head, neck, back and lower limbs. Then there is a sensation of exhaustion and weariness, and that seems to involve principally the head and the mucous membrane. Sometimes the patient says he is too tired to eat, with a cold, that is not an exaggeration, for the mucous membrane all over the organism is too tired to digest, and is much better not taxed with the effort.

Then we have sneezing, chilliness, feverishness - this is a typical condition where you can differentiate it from pneumonia. In all these stages there is no feverishness but a tendency to cold, while in rhinitis, fever is the secondary stage. Then following this, the first local sign is a sensation of fullness in the nose, followed by irritation. In severe cases the nares become dry, and there is localized itching associated with this dryness. Then there is the increased feverishness, along with rapid pulse, representing a passage from the local symptom to general.

In pneumonia in the early stage there is a rapid pulse and secondary there is a dropping. Accompanied these there is the hot and dry skin, swelling of the mucous membrane in the nasal cavity, and along with this the breathing of the patient through the mouth.

After 24 or 36 hours the discharge begins in the form of a thin, watery secretion, afterwards, from a few hours to one or two days, the discharge becomes mucoid, with periodic spasms of sneezing, this indicates a hyper-irritation of the mucous membrane, and the sneezing is a temporary relief from that irritation. Secondary condition. In some cases coughs develop as well as sneezing, and this indicates that the irritation has traveled from the upper to the lower respiratory fields, or down to the mucous membrane of the bronchi and air cells of the lower membranes. It is at this point that measures should promptly be taken to prevent the further spread of the irritation, for example,

a periodic position to bronchitis or pulmonary disturbance calls for an abortive treatment, as outlined in connection with these diseases.

The anterior nares become red and inflamed, the mucous membrane in the same condition, and this may extend to both respiratory fields. Here we should look out particularly for pneumonia condidens, and use proper abortive treatment.

In discussing pneumonia we have said that unless in traumatic pneumonia there is no primary pneumonia. The time to treat pneumonia is before it develops.

The traveling of the inflammation towards the eyes, involving the tear ducts, conjunctiva, injected conditions of the eyeball, with swelling of the eyes, pain in the eye and of the forehead, and the pain extending to the cheek and throat. The voice tends to become nasal or metallic (nasal twang).

Then we have another chain of symptoms - increased temperature to 101 or over.

Loss of appetite and general physical depression. This is the beginning of reaction of whole organism. In three or four days the development of herpes labialis acid condition, takes place. This marks the beginning of the external symptomatic expression of catarrh. After this the general and special symptoms begin to subside. This is the point at which the inflammation tends to extend, for example, in some cases to the eustachian tube, in others, the middle ear resulting in, if not checked, chronic throat trouble, loss of the sense of smell, deafness. In some cases it extends to the pharynx, setting up pharyngitis and stiff neck, sometimes to the extent of "wry neck".

The acute rhinitis usually takes about a week, with edness, swelling, congestion of the mucous membrane, infiltration of the turbinate bones, infiltration of the eyes and ears, with extension to the frontal sinus and even to the antrum of Highmore, causing frontal headache and facial neuralgia symptoms, in some cases it assumes adpteritic form, false membrane formation takes place in the nasal cavity, and in some cases this diphtheritic membrane sloughs with an extension of the infection to the lymphatic glands, of the cervical region particularly. Here you have acrid discharge, and sometimes from the throat and mouth, causing new signs, as excoriation of the upper lip around the mouth, both inside and outside, the acrid discharge setting up eczematous conditions, (mentioned here as a complication).

CHRONIC RHINITIS This is a chronic inflammation of the nasal membrane, resulting in structural changes, with an increased secretion, thickening of

the lining membrane and impairment of the sense of smell caused by anaesthetic pressure on the sensory terminals of the special nerve of smell. This latter condition is found into types.

1. In the syphilitic type of nasal catarrh.
2. In the scrofulous type. Toxin through lymph and blood.

In both cases there is a lowered vitality, both, local and general, due to the deep muscle contraction in the cervical region, the exciting cause being exposure in connection with the intoxication of the blood system. These contractions of the muscles interfere with the nerve, blood and lymph supply, and always leaves behind changes in structure, including lesions in the cervical region, this means that the osseous lesions are secondary to the muscular lesions. The most common chronic lesion is incoordination in the activity of the groups of muscles, resulting in the loss of muscle balance, and later on in atrophy - that is, the atrophic condition of the muscles themselves.

MORBID ANATOMY+ Here we have the same anatomy as in the acute type, along with a thickening of the nasal mucous membrane.

- a. In the earlier stage assuming a dark red color.
- b. In the later stage a grayish color.
- c. The superficial veins become dilated and this results in a general varicose condition. ultimately, if the condition lasts;
- d. Producing polypoid growths. That is, you have a condition in the nose, that, when found in the rectum, for example, would form hemorrhoids, in the nose you have polygeid growths, which are analagous in cause and effect, assuming a different form.

In many cases the enlargement of the mucous membrane results in ulceration, with a thick mucoid secretion, tenaciously adherent to the mucous wall. This secretion is greenish in color, and if it is allowed to accumulate on the membranous wall, dries and assumes a scaly form in connection with the lining membrane. In regard to the types of the chronic rhinitis we have;

1. Hypertrophic - This comes on gradually, following the acute, the mucous lining being thick and swollen, and a spongy.

Among the symptoms that we have are the sensation of fullness in the nose, hoarseness in the throat and constriction in the mouth breathing, snoring, peculiar vocal intonation, deafness as the inflammation extends to the eustachian tube, constant discharge of mucopurulent matter, hacking cough, impairment of sense of smell, impairment of secretion, with a tendency to adenoid and polypoid growth. Among the other symptoms we have watering

eyes, nasal asthma due to hypertrophic condition of the mucous membrane, hypertrophic condition of the turbinated bones.

This hypertrophic type is a common condition of the secondary stages of hysteria where you have a reaction on the mucous membrane, thickening and infiltration, etc.

2. The Atrophic - Here there is drying up of the secretion, with a sensation of dryness, tingling, tickling and irritation, with no discharge from the nose and no sensation of obstruction, as you have in the other types. In place of that there is a acute, sharp pain, radiating up into nasal cavity and into the head.

3. Post nasal catarrh - (Ozaena)

Here the catarrh extends to other parts of the body, particularly into the pleural cavity, and into the pharynx, with an acute pharyngitis. Here we find pain in the posterior nares amounting to sensation of fullness or complete occlusion, pain in the soft palate, tenderness to touch on the forehead along the anterior and lateral portions of the neck, the sensation of irritation extending from the neck, the sensation of irritation extending from the throat up to the nose, one point that is very marked in this case is the subjective sense of perianal odor in the back part of the mouth.

4. Typical Atrophic Type - Here we have the sensation of dryness in the nose, a thick, purulent discharge tending to accumulation and dryness in the mucoid wall. Here we may have two conditions.

a. A certain amount of resorption, the watery fluid part, being resorbed into the fluid circulation of membrane.

b. The more solid part remains on the outer wall, and forms a scaly or cheesy structure which is closely adherent to the wall. That is to say, the little pieces at the back part of it close up against the mucous membrane, and is a sort of mucilage. You have the sense of irritation, of picking the nose, you pull that off and leave a little scar, that is a typical case where you have a little scar following the removal of the crustation.

5. Strumous catarrh. Developed through lymph Found in children with a scrofulous heredity. Here we have the typical symptom of snuffles. The little child, from the time it begins to breathe, never has free nasal respiration but is always snuffling, is breathing through the obstructed condition of this crustation on the nasal mucous membrane. There is always the continuous discharge of a mucopurulent character, the discharge taking place from the nose, sometimes dropping down from the posterior nares in the back of the mouth. In the slum district of the city you see such cases as these, and there you will find the typical

serofulous condition.

6. The syphilitic catarrh - developed through blood. Found in children with syphilitic heredity. Here you have a similar symptom the sniffles. The only differentiated type in that in this type the discharge from the nose is thin and watery, at least until the catarrhal condition becomes chronic in the child, then the mucous membrane becomes swollen and the discharge becomes purulent. Here there are pustules, generally found in scalp, and found in the nasal membrane, and we have a typical pus discharge without any tendency to incrustation. There are two points of differentiation of the two types - in the serofulous type you have a thick, glairy purulent discharge, a mucopurulent, in this type it is not mucopurulent. In the early stages it is thin watery secretion, almost like the typical coryza, and then as it develops into the chronic stage, you will find these pustules, and these pustules come to a head and discharge the purulent matter. In this last type you have this going on until the child dies: it is practically an incurable condition. In some cases the child lives but a short time - in other cases it lives some years. Hereditary syphilitic and tertiary are lymphatic conditions. Treatment.

General treatment from the standpoint of all nasal diseases: this will take in all types of catarrh and hay fever.

The points of tenderness are found particularly in connection with the deep tissues. This is the point that differentiates the simple cold of coryza from catarrh. In the simple cold or coryza you have a tenderness of the superficial muscles: in catarrh, tenderness in the deep structures, example, tenderness deep down behind the angles of the inferior maxillary: also in the deep muscles along the cervical region, below the basi-occiput. We also find a deep tenderness in the upper dorsal region: this is brought out, by deep pressure along the sides of the spine while you bend the thorax either backward or forward, so that you can get deep down.

Typical method of getting at the fifth layer of muscles - lay the patient on the side, take the head and bend it around just as far as you can anteriorly - that is the only way you can get at the deep muscles from the standpoint of treatment. This shortens the anterior and increases the posterior, so that you can get down in between the bones and ligamentous structures.

That applies only down to the 5th dorsal, is not applied below the 5th dorsal. To get at the structures below, you require to reverse the operation, and bend the head backward.

Among the specific lesions we find lesions resisting the power of the mucous membrane, that is lesions that act either through the vasomotor or through the sympathetic system.

Now, it is not very easy to make a clear differentiation between these. In the vasomotor system you have the cerebro-spinal and the sympathetic connections: the centre is on the spinal side, in the other case, you have the centres in the sympathetic system. In the cerebro-spinal system it is the rami communicantes. - In the sympathetic system without the rami communicantes. In cases of the vasomotor lesion, your disturbance is between the spine and the sympathetic chain, but in a typical sympathetic lesion it is the sympathetic ganglia and not the rami communicantes. In the vasomotor type you get a vertebral or a ligamentous lesion: because the rami communicantes pass out through the foramina, while the sympathetic lesion would be a soft tissue or rib lesion. It is the only way we have of telling which nervous system is involved, and what line of treatment to follow in attempting to cure the condition. Tenderness might be as low down as the sixth dorsal in nasal catarrh.

If you have a purely visceral disturbance without any spinal condition, you require to get to the head of the ribs - the lesions that we find, are: visceromotor.

1. In the cervical region - first three - affecting either the vasomotor or the sympathetic system

2. In the dorsal region down to the sixth. This is distinctly a vasomotor lesion, and is the type we find in chronic catarrh. The chief form of lesion is the contraction of the muscles of the other soft tissues.

In the acute type, due to exposure, lack of blood circulation.

In the chronic type this causes the vertebrae and the inter-vertebral disks to get out of adjustment into the state of lack of adjustment.

The result is the obstruction to the nerve and blood supply, keeping up a continual irritation to the part that is affected, lesions affecting the upper three cervical vertebrae have a double effect-

1. Through the superior cervical ganglion, especially in its communication to a point within the cranium:

2. Disturbance of the 5th cranial nerve, either directly or through spinal or sympathetic ramifications, and that is the point where you trace the connection between nasal catarrh and the eyes, ears and stomach - any of the organs having connection through the three upper cervical s, the 10th nerve having relation to the occipito-atlantal articulation: and you can also trace out the pneumogastric

through the sympathetic connection with the heart, the lungs, the tonsils, etc.

In the lesions of the lower cervical and upper dorsal we have either a sympathetic effect or a cerebro-spinal effect, traceable through the sympathetic system to some of the fibre connections of the 5th cranial nerve in its secretory function in relation to the nose. The vasomotor, secretory and trophic fibres in connection with the nose pass up from the upper dorsal and cervical regions through-

a - Through the 5th cranial nerve, or

b - Through the sympathetic system.

In the chronic form the upper dorsal lesions are principally found, because the deeper structures are involved around the spinal column, and this reacts on all of the nerve functions - it reacts particularly on the 5th cranial nerve function - explaining such symptoms as headache, faceache, lachrymation, sneezing, hypersecretion, inflammation of the mucous membrane, and the impairment of the sense of smell due to pressure on the nerve terminals in the mucous membrane, the pressure being caused by blood congestion - the congestive condition is vaso-motor, so you trace them up to the vasomotor condition, and it will give you the vasomotor lesions in the chronic type in the upper dorsal region: this will form the basis of the line of treatment we must follow to cure the conditions.

In treating these conditions of the nose there are some general points that we have to lay down-

1. Manipulation of the tissues along the sides of the nose and around the cheek to relax these tissues and free the blood supply to the mucous membrane, depending on mechanics and reflex action through the terminal branches of the 5th cranial nerve, and the freeing of the pathways around the nasal duct itself, including the nasal duct and all those soft tissue structures in the neighborhood of the nasal duct;

2. With the patient on the back, place one hand on the forehead, the other hand in the basi-occipital region, apply pressure between the forehead and the basi occiput, slightly inclining the head backward, then place one hand on the forehead, the other hand on top of that one, and give pressure, followed by vibration, the pressure and the vibration being applied by the second hand. This treatment frees the fluid circulation; also the respiration both through the nose and the mouth, and also affects, the terminal fibres of the fifth cranial nerve, on the forehead and according to Head's law, they will react on the frontal sinus. This, of course, is only a palliative treatment.

3. Pain in the frontal region, and a sense of fullness in the frontal portion of the head, will be

relieved by gentle tapping over the frontal bone, followed by relaxation in the basi occiput and pressure from the forehead to the basi occiput.

4. Relaxation in the upper dorsal region - This takes place by typical inhibitory treatment over the soft tissues, whereby articulation of the spine, especially in vaso constriction, are downward.

The object of this treatment is to realize obstruction or inequality in the balance of circulation by equalizing the circulation, and thus preventing or aborting congestion. Here you do not require the use of the splanchnic field at all, because the blood field for the nasal region is so small, that you do not require to depend on so large a region as the mesenteric field.

5. Raising and articulating the ribs - especially the 2 and to the 7th downward, to increase the heart and the lung action, and thus pull away the blood from the congested areas. This will relax the tissues on the anterior thorax. Follow it by raising the clavicle to free the carotid and the jugular circulation and the 10th, cranial nerve - in this latter case, to relieve the 10th cranial nerve, you may require to articulate the first two ribs along with the raising of the clavicle.

6. Deep and strong inhibition over the superior cervical ganglion to dilate the blood vessels and allow the congestion to dissolve. To aid this, relax the hyoid muscles, giving the shaking movement to the trachea, open the mouth against resistance these are necessary treatments in connection with the relieving of the congestion.

7. Treat the 8th cranial nerve at all accessible points. This treatment, following the sympathetic treatment, relieves inflammation, hypersecretion and and lachrymation.

8. Local treatment to the soft palate - by placing the finger over the soft palate and moving the finger laterally across the soft palate towards the opening into the eustachian tube. Remember that the soft palate, like the tonsil, is a point where the blood is liable to accumulate and the object here is to keep the blood from elimination.

9. Treat the lungs, kidneys and intestines to keep these organs active in elimination.

10. In acute cases, where the congestion is aggravated, the treatment should be given every hour.

11. See the patient is kept in uniform temperature, avoiding extremes of heat or cold, and also keep the patient lying in bed. The patient dry diet, to decrease volume of blood circulation by decreasing the fluid part of the blood. We will find an exception to that in the dry catarrh or atrophic chronic condition.

SPECIFIC TYPES

In the nasal catarrh the lesions are generally in the first three cervical vertebrae region, and in the chronic types down to the 6th dorsal, the exciting cause is exposure to change in the weather, causing intense contraction of the cervical muscles, rigidity of the ligaments and secondary displacements of vertebrae. The disturbance passes to the nasal mucous membrane -

- a - Through the 5th cranial nerve,
- b- " " Sympathetic chain
- c- Superior cervical ganglion,
- d - blood supply.

In the last case we look for inhibitory lesions involving the inferior cervical ganglion, or vaso motor lesions involving the upper dorsal regions. The secretory disturbance is large one of incoordination between the action of the cerebro spinal between the action of the cerebro spinal and the sympathetic nervous system. According to this, nasal catarrh is caused by congestion of the mucous and submucous membranes structures, this in turn being caused by muscular contractions which produce mechanical disturbance of the internal jugulars and carotids.

The pathology is that of stasis in the facial and sphenoid palatine veins, obstructing drainage from the nasal blood field - the result is hyperemia of the Schneiderian mucous membrane. In other cases strong muscular contraction, especially involving the rectus capitis anticus major, and the muscles that are in contiguity with these, causing mechanical pressure on the 5th cranial nerve, and producing in the nasal mucous membrane and neurotic condition. This is the type of the lesion which causes or lays the foundation of the chronic nasal catarrh, caused by the weakening of the nerve supply to the nasal mucous membrane, either through obstruction or irritation, there is a reaction on the sympathetic system and on the 5th cranial nerve which causes the vasomotor disturbance, and that vasomotor disturbance is the cause in the chronic type whatever may have been the exciting cause or contributing cause. That is the reason why we have the chronic type of lesions in the upper dorsal. Now you must remember that these lesions are not primary - they are secondary. That is to say, they are the result of long continued action on the sympathetic system and the 5th cranial nerves.

In the mechanical types we have the disturbance of the superior cervical ganglion in connection with the sheath of the rectus capitis anticus major muscles, and also the direct effect produced on the internal jugulars and the internal carotids.

In treating these conditions you will remember about the condition we have to deal with in the acute type - it is either a congestion or a neurosis. In the chronic type it is always a vasomotor disturbance, so that you can see what the types of conditions are that we have to deal with in particular cases. In treating these conditions the main point is 1. To relieve the pressure on the nervous system so as to provide absolutely free drainage; 2. Then to stimulate free arterial circulation so that accumulated blood may be moved out through the lymphatic system, and ultimately drained away by the venous system. As a general rule, the direct pressure is found in connection with the jugulars -

a - In connection with the muscular pressure
 or b By pressure on the nerves that supply the mucous membrane, resulting in the paralysis of the mucous membrane.

Many simple cases are caused by direct pressure on the veins, preventing accumulation of blood and other fluid from being removed. In other cases, the disturbance is to be traced to the capillary system, and in this case we have the neurotic condition. That is the general idea of the treatment.

Now we come to the specific points -

1. General treatment of the neck and upper dorsal to relax the soft tissues. This will be followed by articulation in the upper cervical region to equalize the blood circulation, and to coordinate the nerve supplies to the nasal mucous membrane.

2. Thorough spinal articulation from the End dorsal to the End lumbar, to tone up vasoconstriction, followed by a light articulation of the entire spine so as to get the equilibrium of action of the dilators and relieve the spinal congestion that may be present, a light treatment reaching the dilators.

3. Raise the clavicles and raise and spread the upper ribs - this applies principally to the upper five ribs on both sides. The effect of this is to increase the heart action and the lung action. In giving this treatment relax the soft tissues over the anterior thorax, then use the arm as a lever while you apply pressure on the rib posteriorly - midway between the head and the angle of the rib. Then lift up the clavicle, with the arm used as a lever, also, in order to free the jugular and carotid circulation, and also the 10th cranial nerve.

4. Deep inhibitory treatment over the superior cervical ganglion to dilate the blood vessels,

and to relieve the congestion - follow this by relaxation of the hypoid muscles.

5. Pay particular attention to the 5th cranial nerve;

a - Beginning with deep treatment at the internal canthi of the eyes and moving the muscles forward and outward, and applying the moving pressure along the sides of the nose;

b - Beginning at the nose, follow the superior maxillary around from anterior to lateral, giving pressure and vibration over the area of the Gasserian ganglion;

c - With one hand on the forehead and the other in the basi occipital region, apply pressure with the movement of the head backward.

d. Treat along the nasal branch of the 5th nerve; on the nose - over the supraorbital foramen. This relieves pain and inflammation gives tone to the 5th nerve, removes congested condition, tends to normalize secretions, and opens up the circulation of lachrymal fluid along the nasal duct.

6. Headache is relieved by treatment in the frontal region and around the suboccipital region. Cough is relieved by direct treatment to the trachea, inhibition, and if necessary, strong articulation at the third dorsal. That is the point where you will also relieve sneezing and hiccough secondary to the congestive conditions of these membranes. Cough, sneezing and hiccough secondary to the congestive conditions of these membranes. Cough, sneezing and hiccough are all types of incoordination of the respiratory activities. That is what physiology means by speaking of modified respiration.

Chilliness - not chills - is relieved by a rapid stroking along the spine with the fingers, slowly at first, and then more rapidly.

Take your two long fingers, and simply run down from the upper to the lower part of the spine, or vice versa - it is not necessary to treat directly on the skin, because it irritates. This irritation will cause an inflammation of the skin, but you can get a strong treatment without causing irritation of the skin. There you cause a superficial hyperemia you do not get as good results as you would otherwise.

7. Thorough treatment to the lungs, both active and passive, so as to keep the pulmonary circulation in order to prevent the catarrh from passing down to the pulmonary system. Here is where you are required to make the application of active deep breathing exercises in order to get the thorough expansion of the lungs and thorax.

8. Internal treatment of the posterior part of the mouth, the soft palate, and as near to

the posterior nares as you can get access with your fingers. In most of these cases of sore throat, the tendency of the catarrh is to affect one side before the other - one sided involvement of the throat structures. In that case make a sweeping movement of your fingers in the internal treatment from the more congested to the less congested part.

9. Keep the intestines and kidneys in thorough operation, because the patient with catarrhal conditions is subject to a great many different kinds of diseases, that is, will develop culture fields in which all kinds of germs may lodge and find foraging ground. In the internal taking of water it is best to have the patient use hot water; the object is to stimulate the blood circulation without increasing the volume of pressure, or without increasing it any more than necessary. Hot water is absorbed, and it is also resorbed more quickly, so that it will get into the tissues rather than be found within the mechanics of the circulation, and of course that will keep down the circulation of the blood - that applies to any condition where you want to keep down the pressure of the blood.

Another point in regard to the patient, is keeping the patient in a uniform temperature, this does not necessarily mean that you keep the patient in a sweat box, but that you keep the temperature at a uniform point. You have a slight tendency to pneumonic condition, so you should have a little higher than 69 degrees.

CHRONIC THINITIS

1. Removal of this specific lesion in the case, in chronic cases the lesions are dorsal, and of the vasomotor type, and you at once go to the dorsal region and look for and correct the lesions in that area.

2. Build up the blood vessel system to the point where it can supply the nasal mucous membrane so as to maintain normal trophic conditions, and overcome the tendency to atrophic conditions.

3. The principal palliative treatment is in connection with the cervical soft tissues, to cause the relaxation of these tissues and equalize the blood circulation.

4. Treat the patient from the standpoint of the general constitution - for example, treatment of the sympathetic system in the cervical region, stretching and rotating of the head and neck, vibration around the ears, over the temples and around the nose, manipulation at the angles of the jaws to relax all the soft tissues and glands.

5. Inhibition and vibration over the points of exit of the 5. cranial nerve at the inner canthus of the eye and along the side of the nose.

6. Elevate and articulate the ribs and apply extension to the thoracic muscles in conjunction with deep inspiration.

7. Extend the spine on the weight of the body and apply manipulation to the muscles and along the path of the venous and lymphatic circulation.

8. Cleanse the nasal pharyngeal cavities by the use of some antiseptic solution. Give the patient easily digestible and nutritious food and especially in the case of children, avoid all exposure to extremes of heat, cold or moisture. This applies to keeping the patient from being overheated in any way, whether through exercise or due to lack of proper ventilation. Also avoid sudden changes from heat to cold, or vice versa.

CATARRHAL ASTHMA OR ROSE COLD OR HAY FEVER

Here we have an acute inflammation, with a resultant catarrhal condition of the upper air passages, the mucous membrane of the nasal pharynx becoming neurotic and susceptible to irritation. The hay fever condition is a periodical one, found either in the spring or fall, or both, the changes in the season being the intermediate atmospheric excitant. It is commonly associated with the nasal asthma and dyspnea, and nearly always secondary in persistent and intense headaches. The hay fever proper represents a chronic condition in the lining membrane, in which there is a susceptibility to irritation. This chronic diathesis comes to the surface in acute attacks that occur periodically, sometimes once in a season, at other times periodically during the season, in the fall, where you have a long continued attack, in other cases you will have an attack once a week or so weeks. In the acute form it is associated with the action of some irritant introduced in the nasal cavity by the atmosphere. An acute attack is associated with a hyper sensitive condition of the mucous membrane. In some cases, however, there is a general nervous condition back of the mucous membrane condition. The local condition is represented, for example, by hypertrophy of the mucous membrane, polypi, etc. In the majority of cases of hay fever there are three conditions found.

1. Nervous diathesis;
2. Some irritation in connection with the atmosphere;
3. Some local condition of the mucous

membrane. The most common of these conditions (local) is hypertrophy.

The acute attack is commonly excited by pollen from plants or seeds or dust carried into the nasal passage by the air. This however is not absolutely necessary, because a local condition of obstruction will act as an irritant to the neurotic membrane.

In the chronic type there is a constitutional weakness predisposing the acute attack. In some cases this constitutional condition becomes hereditary, and you have the hay fever condition following in the next generation - that is the typical hereditary hay fever. The primary nervous condition locally predisposing the mucous membrane is associated with lesions in the middle cervical region, in the lower cervical and upper dorsal as far up as the fourth dorsal, and also in the three or four upper ribs.

Merbid anatomy) Hypersensitiveness of the mucous membrane, with resultant hypertrophy, especially of the middle and inferior turbinate and the soft parts of the nose, the septum being commonly reflexed from its normal position.

The acute attack usually begins with symptoms of paroxysmal sneezing, followed by uneasiness and itching in the nose, tickling sensation, the sensation of burning and scalding at the inner canthus of the eye, extending into the nose and throat. After the sneezing continues for some time there is the development of coryza, with redness of the conjunctival membrane, swelling of the eye lids, intense headache, paroxysmal cough, and sometimes paroxysms of asthma. Then we have the last stage, irritating discharge of a watery nature from the nose and eyes. In some cases this passes down to the bronchial tubes and sets up an irritating bronchitis. Not infrequently you have an excretion of the upper lid, due to the acidity of the watery discharge from the nose.

Etiology. We find the derangement in those areas which act on the motor, vasomotor and sensory nerve supply - also in the region of the blood vessels of the upper respiratory tract, for example, contracted conditions of the scaleni muscles and the sterno mastoid muscles, anterior and posterior thoracic muscles, inferior cervical and upper dorsal in spinal region.

Lesions. We find involving the ribs, clavicles, cervical vertebrae, the extent of the lesions depending on the asthmatic development. In this latter case is a vasomotor in the lower cervical, upper dorsal, first and second ribs and clavicles. These lesions affect the fifth and tenth cranial nerves and the superior cervical ganglion, causing pain and swelling of the face, watery discharge

from the eyes and nose, sneezing. The fifth and tenth nerves are involved through the floor of the fourth ventricle where these two nerves are closely connected. The vaso dilator fibres to the face and mouth leave the cord from the 2nd, 5th dorsal, passing upward through the sympathetic chain to the Gasserian ganglion, hence, lesions from the second to the fifth dorsal are frequently found in chronic types of hay fever, representing chronic neurosis of the nerve supply to the upper air passage, or an undue stimulation of the nerve supply to the upper bronchial tubes. Here we have the explanation of the asthmatic symptoms - in other words, they are bronchial.

TREATMENT

1. relax the muscles along the cervical and upper dorsal regions, giving strong stimulative treatment to reach the motor and sensory nerve supplied.
2. Correct the lesions by articulation, 3rd cervical to 5th dorsal.
3. Treat along the spine in connection with the thoracic muscles, relaxing the deep tissues to free the circulation and relieve the tension on the nerves;
4. Raise the clavicles and upper ribs.
5. Give tonic treatment to the tenth cranial nerve, and to the vaso motora from second to seventh dorsal.
6. Specific treatment to the fifth cranial nerve, because of the number of fibres that are given off to the nasal region, it also relieves the hyperesthesia of the mucous membrane, after this, deep treatment in the subocciput over the superior cervical ganglion, and deep inhibition along the branches of the fifth cranial nerve. Treat along the sides of the nose to free the blood circulation, to reduce the swelling (hypertrophy) and to reduce the irritation to the nose mucous membrane.
7. Apply strong pressure over the forehead, followed by vibration, to open up the passages, and to relieve congestion of the head and face.
8. Treat the palatine nerves in connection with the palatine, to relieve hyperesthesia, itching and sneezing, and as an aid to this inhibit the phrenic nerve along the sheath of the carotid.
9. Deal with polypi from the standpoint of their specific treatment;
10. In severe cases it may be necessary to have the patient removed to some higher altitude.

EPISTAXIS. sometimes called **RHINORRHEGIA.**

Here we have a hemorrhage of or from the nose, due to some local or constitutional condition, for example, caused by traumatism, a blow on the nose, or a fracture of the skull, or some injury of the nose, in sneezing or in coughing, scratching of the nose caused by some of the catarrhal conditions. The presence of tumors, polypi or foreign bodies in the nose, enlargement of veins, particularly in the anterior or inferior parts of the septum, with secondary hemorrhage. LESIONS found are those of the atlas or of other cervical vertebrae in the upper half of the cervical region, interfering with the vaso-motors to the nose, causing a weakening of the mucous membrane lining, weakening of the blood vessels walls, in some cases this is a symptom of other conditions, eg. constitutional weakness, pulmonary weakness, obstruction to the general circulation, irregular or suspended menstruation, vicarious menstruation, suppression of hemorrhoidal conditions by mechanical means or surgical operations where localized hemorrhoidal blood is stopped, and a nasal hemorrhage as a compensation, also a suppression, in pulmonary hemorrhage, in phthisis. Sometimes caused by or secondary to general conditions general plethora, engorgement to the upper circulatory part of the trunk, including the head engorgement of the circulation in the head on ascending to a more rare field atmosphere, chronic anemia, cerebral congestion, headaches. Sometimes it is also a part of the premonitory stage of some of the febrile diseases, especially typhoid fever. In some cases it is due to exposure, particularly in children, from changes of life at period of puberty, particularly in the female sex, and changes in old age, particularly in neurotic patients.

The hemorrhage represents a continuous stream of blood or only the exudation of a few drops of blood - in the former case, there is nearly always some form of rupture; in the latter case, a sort of mucous membrane process blood sweating.

The commonness of epistaxis is to be accounted for by the great vascularity of the nasal mucous membrane. In most of the cases of spontaneous hemorrhage it takes place in connection with the arterial blood supply to the septum of the nose. In other cases it is found in the posterior part of the nasal cavity, particularly where there is adenoid growth, polyroid growth, hypertrophy of the nasal mucous membrane. When the hemorrhage comes from the posterior part of the nose you have the expectorative hemorrhage, a dropping down into the back part of the mouth. Here you differentiate between posterior nasal hemorrhage and pulmonary or laryngeal hemorrhage, in the pulmonary the blood is created or gasified.

Lesions are found

- a - In the strong muscular contraction in the upper cervical region.
- b - In the atlas, axis and third cervical.
- c - Lesions of the superior cervical ganglion, particularly on one side, many cases of nasal hemorrhage can be controlled by inhibitory pressure over the superior cervical ganglion, consequently this represents a rigid condition of the superior cervical ganglion as the lesion.
- d - Rigid articulation of the entire cervical area meaning that the one vertebrae is tightly bound to the other resulting in practically no articulation of the neck.
- e - Lesions at junction of 7. cervical and 1. dorsal vertebrae,

In the chronic cases that may be called chronic recurrent epistaxis, for example, recurring once a week or once in ten days, we find atlas and axis. 5th and 6th cervical, 2nd and 3rd, dorsal lesions, and in many such cases lesions are well marked.

TREATMENT FOR EPISTAXIS

1. Have the patient sitting up and hold the nostrils tightly between the fingers and thumb, throwing the head slightly back on the neck.
2. Apply strong pressure over the facial artery as it passes over the inferior maxillary, on nasal artery at the inferior canthus of the eye, and strong pressure over the carotids alternately by relaxing the pressure and not holding the carotids too long, causing collapse through anemia of the circulation, resulting in patient fainting. The effect of these pressures is to slow down the blood circulation, and to allow the spontaneous coagulation at the point of primary hemorrhage.
3. Correct any lesions found in the cervical region, so as to remove any possible irritation to the vasomotors and to equalize the vascular circulation.
4. Apply stimulation by vibration over the superior cervical ganglion to stimulate vaso constriction, at the same time stimulate at the 2, 3 and 4 dorsals to assist the vaso constrictors.
5. If the hemorrhage is palliated, then place the patient in the recumbent posture, raise the patient's arm above the head, and place the finger and thumb on either side of patient's nose and have patient breathe through mouth. Place the finger on either side of the first three cervical vertebrae and push from posterior to anterior, at same time tip head of the patient backward, keeping up pressure for a few seconds or minutes.
6. In severe cases make application of ice to the head, nose and superior cervical ganglion, the

lower cervical and upper dorsal regions, allowing it to remain and at the same time use hot injections into the nostrils, and follow of hot water by cold water (not ice). In some cases the simple epistaxis is relieved by application of something cold at the back of the neck. In some uncontrollable cases it may be necessary to plug the posterior nares taking cotton or gauze and pushing it into the posterior nares by a sound, etc. packing tightly to produce pressure there.

7. In all of these cases of epistaxis, give treatment generally similar to that in case of nasal catarrh so as to control the circulation of the blood to and from the nasal field.

Miscellaneous Nasal Conditions.

Polpy

Here are symptoms of obstructions, sense of fullness, breathing through the mouth, snoring, etc. these are commonly associated with acute rhinitis. Symptoms become aggravated in connection with extreme posture. If polypi continue, and represent chronic condition, then we have development of conjunctivitis from pressure on lachrymal duct, epistaxis and sneezing are symptoms. In polypoid growths you require to make a rhinoscopic examination.

Polypi appear as yellowish or greenish white glazed masses projected into nasal cavity in circular form resting on flat base: growth may be either soft or hard, which can only be determined by the use of some sort of probe.

NASAL TUMORS.

Found similar to those elsewhere in the body, symptoms are those of obstruction and deformity. Most common types are fibroma-sarcoma and osteo-sarcoma: sometimes also endochondroma. Malignant tumors distinguished from benign:

1. Grow quickly
2. Very soon extend over large area.
- 3 Associated with great pain.
4. Bleed very rapidly, causing epistaxis.
5. They cause a discharge from the glands of the neck: associated with enlargement of those neck glands.

All malignant tumors are a blood condition, and an injury only localizes it.

Foreign Bodies in the Nose.

Here we have presence of substance introduced into nasal cavity, or living insects found in the nose. Presence of these foreign bodies represents obstruction, frequently ulceration. In latter case the foreign body becomes incased in ulcer, can only be detected by use of probe and rhinoscope. We have

severe pain at the base of nose, extending backward toward the back part of the mouth, throat and head, sometimes causing destruction of tissue and giving us symptoms of insomnia, breathing through the mouth etc.

Glanders - Here we have condition resulting from infection or contagion. First manifestation of glanders, in the human subject at least, is pain in the limbs, followed by rigors in the trunk of the body, rise in temperature and typical febrile symptoms. Later there is nausea, vomiting, diarrhoea, dyspnea, it is called typhoid state. This is a low state of vitality that precedes typhoid fever, That is typical of every function, as a matter of fact, is really more typhus than typhoid.

First external condition of glanders is in forms of small purple spots on the skin, then it gradually enlarges until much swollen; then we find a thick yellowish discharge followed by hemorrhage, then we have the pustular stage, crop of little pustules developed around the nose, internal or external.

Ulcers of the Nose.

There are different kinds of ulcers, most common are;

1. Syphilitic Ulcer. Representing secondary or tertiary stage, in which there is breaking down of tissue, typical pit formation; The discharge has a bad odor, results in destruction of tissue, with loss of sense of smell, localized nasal anoxia, general debility and great local tenderness.
2. Tubercular Ulcer. Most typical condition associated with these ulcers is the readiness with which they bleed. Of course they are secondary to tuberculosis in some other part of the body, there will be history of such condition somewhere, especially in the pulmonary system.
3. Ulcer of the Anthrax. Abscess which first appears as small cystic tumor, then tumor contents because putrid matter. The two chief symptoms we have here are intense pain at root of nose and severe neuralgia pains in front of head. Secondary to these we have cyanotic symptoms, nausea and vomiting, indicating possible or approaching collapse because you cannot get the blood in circulation. Then we have development of inflammation and sometimes the inflammatory process extends into the brain, not infre-
4. Ozaenic Ulcer of Lupus Found in connection with lupus condition.

quently find cases of this type resulting in death.

TREATMENT

All of these conditions call for a general nasal treatment, such as has been mentioned.

1. In case of polypi, these are treated very much like nasal congestion, that is, to cut off the circulation of blood in such a way as to leave the polypi alone until it gets starved out. In some cases where polypi seriously obstruct the nasal passage they may have been removed by surgical operation, can be pulled out with snare or forceps, snare being best protection to the nasal cavity, as cauterization produces cicatricial tissue. Treatment should be kept up to stimulate circulatory conditions so as to establish normal circulation.

Tumors of the Nose.
These are dealt with in same way as polypi, except in malignant tumors, to be discussed later on.

In case of foreign bodies - these can be removed by the syringe similar to process of removal foreign bodies from ear. Sometimes it is necessary to use the forceps or snare, and in many cases inflation from posterior nares, in that way you can drive outward through the anterior nares.

In glanders and ulcers - Treatment of these is simply part of palliative process in connection with the general disease, or diseased condition that lies back of particular condition, that is control of pain, hemorrhage, thorough stimulation of the vasomotor system. These represent main points in the palliative treatment of these miscellaneous conditions.

Larynx

THROAT

Larynx is subject to all diseases of obstruction and all the inflammatory processes that are found in connection with mucous membrane. Also subject to special types of diseases as organ of focalization. Anatomical relation of larynx and of its parts to the general structure of throat and the thorax and one side, and mouth and nose on other side, gives it a special function in relation to passage of air and alteration of tissue structure in production of vocalization. In each tissue is liable to inflammation, congestion, degeneration, new growths, ankylosis, at articulations, paralysis and spasms.

Among other symptoms of greater importance we find dyspnea in connection with occlusion of larynx, dysphagia in connection with obstruction,

cough and aphasia. In latter case the cause is failure to vibrate in connection with vocal cords, or rigidity of muscles and articulations of the larynx.

As an organ the larynx is highly specialized, therefore most minutely and delicately innervated. Connections are established between central nuclei in the brain, including brain proper, medulla and basal ganglia; large trunks of nerve fibres passing around series of complex reflex pathways, bringing larynx in close connection with a large number of other structures; hence, in difficult phonation, either a symptom or disease, there may be conditions in the central nuclei of brain, or conditions of nerve trunks reflexly communicating with large number of structures in throat, mouth, nose and thorax. In all laryngeal diseases symptoms are well marked - sometimes it is difficult to differentiate these symptoms in relation to pharynx; hence one of the most difficult points in laryngeal disease is differential diagnosis. Morbid process in laryngeal diseases is determined to some extent by the symptoms; also by the external physical appearance, determined by the laryngoscopic examination. In some cases laryngeal condition is purely symptomatic of some general process, for example, acute laryngeal inflammation as a symptom of erysipelas, typhoid fever, small pox, chronic inflammation involving any contiguous structure, and particularly ulcerative processes, rheumatism, gout, syphilis. In rheumatism and rheumatic gout, laryngeal rigidity and ankylosis are not infrequent, and in syphilis laryngeal cicatrization is common.

Subjective Symptoms

1. Type of pain is generally a sharp shooting one, or stinging or it may be simply a tickling pain, that is, a pain analogous to a mild irritation to the mucous membrane. In some cases pain is so intense as to produce laryngeal spasm, and in the spasm, speech and deglutition become impossible.

In acute laryngitis pain is cutting or boring. In the mild inflammatory dry catarrh, or the laryngitis of lupus, it is simple tenderness. In cancer and tuberculosis and destructive ulceration of the larynx it is very intense and generally boring. Local laryngeal pain generally extends to the ear. In this case the pain travels through the auricular branches of 10th cranial nerve, and may be found at any point where the 10th nerve distribution takes place. In some cases of laryngitis there is aggravation of a previous condition of dormant hemorrhoidal condition, or a dormant ovaritis, etc. the parts thus showing a weak point not yet built up to normal.

2. Paræsthesia. This implies to peculiar sensation of itching, boring or stinging found, for example, in the case of the presence of foreign bodies in the larynx. In the inflammatory processes of laryngitis there is the sense of fullness, pressure, extending sometimes to the choking sensation found, in globus hystericus. Here we have a purely subjective symptom with absence of real laryngeal conditions; then there is feeling of dryness in the larynx as an almost invariable accompaniment of all laryngeal inflammations and obstructions.

Hyperæsthesia and Anæsthesia.

Hyperæsthesia is found in connection with a tickling sensation with a constant desire to cough. This may be induced by slight irritation in acute inflammatory processes and congestive disturbances of different kinds, congestion of lungs, a very common condition found is congested condition of system in suppressed menstruation. Sometimes it goes on to the extent of asthmatic condition.

In anæsthesia there is tendency of particles of food to fall into the larynx, example, in pharyngitis, in diphtheritic conditions and in paralysis involving the superior laryngeal nerve, or in the type of paralysis called bulbar paralysis, sometimes times in some of mental diseases, as parotic dementia.

Symptoms associated with irregularity or deficiency of deglutition. Found particularly in diseases affecting the central nuclei of the nerves distributed to the larynx. This is one of the causes where you will have symptoms secondary to paralysis as mentioned before.

Modification in respiration, particularly in dyspnoea. Found principally in the obstruction of larynx, due to inflammation, edema, spasm, presence of foreign bodies, paralysis of laryngeal muscles sometimes very slight, sometimes causing oppressive breathing. In very aggravated conditions neck becomes rigid, head bent backward and muscles of the neck rigidly contracted, respiration being modified.

a - In inspiration, in spasm of larynx, in inflammatory edema of larynx and in laryngeal diphtheria.

b - In expiration, in a type of disease, laryngismus stridulus.

Dysphagia, Difficulty in swallowing marked particularly in cases of destruction of tissue, for example, in ulceration, etc. In acute inflammation and ulceration of epiglottis, recognized by two symptoms intense pain and involuntary dropping of food into larynx without ability to control it, typical

in cases of horridity, as in child where you have the ulcerative process of infantile larynx, and of child's life is prolonged voluntary swallowing of food may be impossible.

Dysphonia - Change or loss of voice, associated with swelling of mucous membrane, occlusion of laryngeal orifice or any other type of obstruction. In this case the voice may be simply hoarse, or vocalization may be changed, found in acute and chronic inflammation, whether the inflammatory process is disease by itself or in connection with diseases before mentioned, also in public speakers.

Cough - Type of cough is dry in acute inflammation of the larynx, constantly aggravated by speaking or breathing. Another type is called the metallic cough, principally in children, or due to laryngeal irritation by bronchial or pulmonary disturbances. In chronic inflammation cough is dry, rough and hoarse. In edema of the larynx is what is called the suppressed or suspended cough, with various successful or unsuccessful attempt at coughing.

The paroxysmal cough is found principally in the diphtheritic type of disease. The hemorrhagic cough is found principally in scrofulous or tubercular patients and the hemiplegic patients.

Physical Signs. Objective Side of symptoms

Inspection of external aspect of larynx will indicate presence of swelling; inflammation, deformity and also irregularity in the movement of the larynx. Local swelling of tissues over larynx is found in cartilagenous inflammation, especially in connection with the movements of larynx. Is increased in connection with dyspnoea, sometimes to such an extent that the spaces above sternum and clavicle are obliterated with abnormal contraction of sternum itself. This is shown particularly in connection with the attempt to move the arm in a circular rotatory movement, and pull arm above the head; in the latter case we find the thorax is pulled over the same side as the arm is moved without any movement in the upper part of the sternum. In other words you have an immobile upper sternum without any movement.

The sternal pectoral muscle is always rigid in these laryngeal troubles, trapezius muscles are also rigid, more particularly one sided, unilateral that is to say, one trapezius muscle rigid and the other normal, showing incoordination of the muscular action.

Internal examination of the larynx is made with the aid of the laryngoscope. Here you require

to have good light, preferable the concentrated sunlight, or if that is not available, we have to take the next best, the electric light or gas. In making the examination it is always necessary to have - that is to say, in connection with the gas jet, have a reflector you can use, then it is necessary to have a headband with reflector attached to band, concave, if artificial light is used. In addition you require a laryngeal mirror for insertion into the back part of the mouth, and a curved probe or sound. Have patient seated so that light will fall on the face from one side, determine which side is best, some people can see best when standing on left side and some on the right.

Throw head and shoulders of patient well forward, head slightly back on the shoulders; then seat yourself in front of the patient so as to be slightly below the level of the patient's head. You can throw the light up and let it mirror down ward then when you look down you will see the reflection of the larynx and posterior nares.

Place yourself at focal distance from the larynx of the patient, then place the laryngeal mirror so that the breath of the patient will not cause the precipitation of the sweating of the glass, open mouth of patient, pull out tongue, using the tongue forceps. In a simple case where the examination will not extend in time you can use a towel, handkerchief, etc. Then put in the mirror, first inverted so as to pass along the tongue and palate to the posterior wall of the pharynx, then turn the mirror so that the larynx will be reflected toward the eye, then make patient breath gently, gradually increasing the respiratory action, and follow the movements of the different structures while patient is breathing, looking particularly for coordination or incoordination in different parts.

If pharynx is exceedingly sensitive it may be necessary to use some local anaesthetic, some preparation of cocain to be used with the spray.

In normal larynx it is arched above, epiglottis lying below, in centre lie the vocal cords, on either side of these lie the loose foldings of false vocal cords, at bottom of cavity lie the arytenoid bodies, and between these, the folds of the inter arytenoid space, extending outward to fossae. The mucous membrane of larynx is normally of pinkish color, excepting in the neighborhood of the vocal cord. In connection with the arytenoid ends of the cord we find the attachments branching out from the triangular opening of the glottis,

through which the tracheal rings can be seen. In vocalization the arytenoids come together, and also the inner ends of the vocal cords, thus closing the glottis.

These are the points you should pay particular attention to in connection with respiration, to find out whether they move with the increasing respiration together, or whether one simply acts by itself and the other does not act at all.

Types of Diseases of the Larynx.

Acute Laryngitis. This is an acute inflammation, catarrhal in nature, involving mucous membrane of larynx. Always associated with sensation of fullness, dryness and cough. Sometimes with dyspnoea. In some cases it is primary but more common it is secondary to some local catarrh in another field, or to a general catarrhal condition of the entire respiratory tract.

Exciting causes are exposure to cold or damp, or to sudden changes,

excessive use of the voice, more particularly in connection with cold air, the inhalation of irritating vapors, traumatism, lodgment of foreign bodies, contraction of muscles in connection with atmospheric changes interfering with the circulation and causing congestion of mucous membrane.

Lesions are found in upper cervical, involving innervation of larynx. Then we have other lesions, such as luxation of the first rib, causing congestion by entrapment of the lower anterior lateral muscles of the neck, we also find lesions in the upper dorsal from the vasomotor side. In some cases laryngitis is a complication of the infectious diseases, especially measles, small pox, whooping cough, erysipelas, or it may be secondary to Bright's disease or chronic form of dropsy.

Morbid Anatomy. Mucous membrane is hyperemic and inflamed, followed in infiltration. In severe cases there is oedema of the glottis, and also of the true and false cords and lachia. Epiglottis passes through stage of hyperemia. Inflammation and infiltration, followed by mucoid exudation.

Symptoms. Condition comes on with series of rigors, sometimes accompanied by chilliness, in the muscles of the neck, and sometimes they extend down into the pectoral muscles, followed by feverishness, then we have hoarseness cough, dryness of the throat, tickling sensation of a foreign body in the larynx. As the cough increases pain develops, first pain being a burning one associated with a dry cough, then there is a sharp tickling pain, also interference with the vocalization.

Later cough and pain, become paroxysmal, at this stage there is exudation, cough takes on a moist characteristic, following this there is expectoration of a yellowish mucoid substance, and the cough and pain are worst at night and in early morning. Acute attack of laryngitis usually runs a course of from three to ten days unless broken by treatment.

Note particularly that acute laryngitis, laryngeal croup, is liable to stimulate membranous croup, particularly in children. In the croup there is a swelling and exudation, with closing up of the glottis, due to accumulation of the sticky mucilaginous material. Croupous laryngitis begins with catarrhal symptoms child becomes languid, sleepy but does not sleep, has no appetite, is thirsty, then is chilly, and following this there is a rise of temperature, and marked difficulty in breathing, with the typical croupy cry. After a few hours or days there is a mild febrile condition, more marked catarrhal symptoms, dyspnoea, a peculiar shrill whistling respiration, with paroxysms of cyanotic spasm, larynx moving up and down quickly while the head of the patient is thrown back. Spasms of the muscles of the neck causes the larynx to drop down posteriorly, causing a somewhat tetanic rigidity of the base of the neck and of the upper two or three ribs and sternum, also spasmodic rigidity of the epigastrium. These paroxysms come on frequently marked by drawn and livid face, pallor and coldness of the extremities, facial sweat, increased heart action, great restlessness of the body, sometimes twitching of the fingers, rolling of the eyes, in very severe cases convulsions.

In Laryngeal Diphtheria, there are the diphtheritic symptoms with some history probably in some cases of exposure to diphtheritic infection. Principal signs are the diphtheritic patches found in the fauces and in the posterior nares, a secondary enlargement of the lymphatic glands and a well marked development of albuminuria, and when we get the albumin symptom we are not dealing with a local condition, but a constitutional condition. There are people who have a chronic diphtheritic condition when they have a cold, that is a local condition, but the average weak child will be able to survive diphtheria, a strong child dies from shock instead of diphtheria.

Spasmodic Laryngitis, or false croupous laryngitis, Here we have catarrhal inflammation

of the larynx, with secondary spasms of the glottis, found principally in young children. In majority of these cases it is probably that they have.

a - An acute laryngitis:

b - Associated with spasms, a reaction to sympathetic nervous system, involving tongue, pharynx and larynx and glottis, caused by toxemia.

Symptoms are difficult croupes, coughy breathing.

Primary cause is derangement of nerve supply with secondary obstruction of the blood supply to laryngeal mucous membrane and muscles of larynx. Lesions may be muscular along anterior or posterior neck, hyoid muscles, rigidity of cervical vertebrae, or occipito-atlantal articulation and sometimes lesions extending down into dorsal region, and involving the two upper ribs. Here we find a mild febrile condition, slight cough, wakefulness, husky hoarse vocalization and paroxysmal efforts to breathe. Child gradually becomes weaker from exhaustion, here we have cold perspiration, particularly on the face due to struggle of nervous system against the contraction of the muscles, also the lack of oxygen. In typical cases we have one of those paroxysms each night, sometimes night and morning.

4 Another type of laryngitis is associated with inflammation of the glottis, larynx being involved only secondarily. Here we have sensation of foreign body in throat, also sensation of pressure and constriction at root of tongue, pain in swallowing and thickened and rigid condition of pharynx.

5. Another type is Edematous Laryngitis. Here we have acute inflammation of lining membrane of larynx and that of glottis, followed by the infiltration of a serous fluid into submucous tissue of larynx. This generally occurs in the course of an attack of acute laryngitis or as one of the complications of chronic laryngitis, particularly if inflammation exists.

May also be found in Bright's disease, erysipelas, scarlet fever, diphtheria and secondary to syphilis. There is great swelling in epiglottis, rigidity of mucous membrane, accumulation of fluid, either serous or seropurulent, in connective tissue.

Another type of laryngeal affection is Laryngeal Stenosis. This may be a complication of laryngitis marked by dyspnoea, huskiness of voice, sense of suffocation and oppression, gasping for breath, cyanotic symptoms, retracted and immobile conditions of thorax. Typical lesions here are the rigid and tetanized conditions of the sterno-mastoid muscles, inflammation extending to sub-mucous tissue,

with very marked inflammatory symptoms. Stenosis is always marked by aphyoidal tendencies. Where the stenotic condition is relieved there is always the tendency to abscess formation, either local or general, in connection with larynx, pharynx and other contiguous structures. Inflammation tends to travel into cartilagenous structures, where these structures are involved it is called Phlegmonous Laryngitis, marked typically by deep abscess, great edema, the obstruction or stenotic symptom then following, such as hoarse vocalization difficulty in breathing, etc.

Chronic Laryngitis - This type is secondary to the acute, or, else comes on gradually secondary to some other diseases infectious, Bright's, syphilis, etc. Becomes chronic condition in connection with exaggeration of the catarrhal condition, the continued inhalation of irritating substances, the excessive use of stimulants, constant exposure to cold or extremes of climatic changes, particularly where there is a large element of moisture, or to overuse of voice. These are all exciting causes that combine⁶⁴ top of acute laryngitis cause it to pass into chronic.

Lesions found in these chronic types are in the upper cervical and upper dorsal regions, representing the vasomotor type of irritation, or in the lesion fields of tuberculosis, syphilis, chronic bronchitis.

Chronic laryngitis occurs mostly after mid-life, particularly in the male sex. It manifests itself particularly in dryness of mouth and throat, continued discomfort in the pharyngeal area, difficulty in speaking, constant tickling, at first slight mucoid secretion and later a thick purulent secretion, chronic swelling of the mucous membrane with slight inflammation - in other words, there is not the acute inflammation or hyperemia that we find in the acute type, very rarely do we find suppuration unless the chronic type takes on for a time the acute form. Irritating cough and hoarseness are present all the time, These are due to thickening of mucous membrane, and enlargement of vocal cords. In very severe chronic types there is aphonia, with constant pain in the larynx, constitutional fatigue, following the slightest use of the voice. In some cases aphonia appears paroxysmally, this is due to neurotic condition of the mucous membrane, associated with some irritation like exposure, over use, etc. at some particular time.

LARYNGEAL NEUROSES.

I. Laryngeal Stridulus. Condition of spasm or convulsion of glottis, found exclusively in children, especially in those who are not well nourished. Muscles that are involved are those that are supplied by the inferior or recurrent laryngeal nerves. Not associated with laryngitis but is a purely functional condition, representing irritation of nerve supply. Attacks are usually excited by some reflex condition, secondary to teething in the child, gastrointestinal disturbance, irritation of nerves in connection with lesions in spinal region where we have spinal lesion. corresponding with the field of gastrointestinal condition, that same field of lesion being the field of nerve supply to laryngeal muscles, lesions about fourth dorsal. Lesions at that area are likely to give us reflexes in connection with any part of head, nose, throat ear, etc.

Symptoms - Usually come on suddenly, especially during the night, the child waking up suddenly and after a few whistling involuntary inspirations, the child begins to struggle for breath.

There is sudden stoppage of breathing, with pallid, anxious, deathlike appearance of the face, tonic spasm of muscles, nostrils dilated and head thrown backward, spine rigid and arched, these symptoms indicate a sudden spasmodic interruption:

1. Of the rhythmic cycles of muscular system:
2. The sudden interruption of visceral action, in other words, you listen to the heart beat, and there is no heart beat or pulse, abdominal muscles are rigid, indicating suspension of the visceral action.
3. Spasm of blood vessel system, indicated by cold perspiration breaking out over the face and upper part of the body, and sometimes over the whole body. It is a vasomotor spasm of the blood vessel system, with constriction predominating, hence the perspiration. Sometimes you have the spasm of the muscular system in dilation, then you have no perspiration.
4. Spasm of motor function in hands and feet.
5. Spasmodic suspension of the voluntary control of the excretory system, evidenced, in involuntary discharge of urine and feces.
6. A sudden relaxation indicating that the spasms are tonic and not tetanic in their nature.
7. Following this there is deep and long inspiration, indicating the craving for oxygenation, inspirations gradually lessens until the cyanosis and the spasmodic conditions disappear.

Here we have conditions where we can give no palliative treatment until last stage is completed,

we must allow nature to run through the chain of events in that series. Some types of laryngeal spasm are very mild, in which there is simply a temporary suspension of breathing process, with loud noisy inspiration and following this suspension of breathing. This type is frequently found in adults and is sometimes spoken of as a hysterical type.

There is another type found in children, in which there is a series of harsh inspirations with only a slightly noticeable suspension of respiration, followed by a short noisy expiration. Here we have struggle of glottis in an attempted imperfect closure. Sometimes types of this condition are mistaken for epilepsy. Some children will become absolutely still and roll the eyes, and give what seems to be a cry, & it is not a cry but an inspiration, and that is not epilepsy but a laryngeal spasm. This is found frequently as a complication of laryngitis and also in pharyngitis.

Laryngeal Paralysis. There are four types of this kind:

1. Paralysis of the tensors of the vocal cords - Here we have a paralyzed condition of the crico-thyroid involving the superior laryngeal nerve: the only marked symptom that we have here is a deep, rough voice, in which the high tone or pitch of voice is impossible, with anaesthesia and paralysis of the movement of the epiglottis, epiglottis falling back upon the tongue and the glottis opening in a wavy movement or series of wavy movements. This is found particularly in diphtheria in acute or chronic form.

2. Paralysis of the tensors of the vocal cords - Here we have a paralyzed condition of the crico-thyroid involving the superior laryngeal nerve the only marked symptom that we have here is a deep, rough voice, in which the high tone or pitch of voice is impossible, with anaesthesia and paralysis of the movement of the epiglottis, epiglottis falling back upon the tongue and the glottis opening in a wavy movement or series of wavy movements. This is found particularly in diphtheria in acute or chronic form.

3. Paralysis of the abductor muscles in connection with the vocal cords - Here we have the involvement of the internal, external and transverse arytenoids, the recurrent laryngeal nerve being the one involved. Here we have the symptoms of entire loss of voice coming on suddenly. In some cases transverse muscles alone are involved, here there is hoarseness, also aphonia, anterior portions of vocal cords coming together, leaving triangular opening posteriorly, sometimes internal structures alone are involved. Here we have dysphonia as symptom, cords coming together at the two extremities, remaining apart in the middle, leaving a sort of loose sacculum of the middle. This is the type found particularly in hysteria.

Paralysis of the abductors-

Here we have involvement of recurrent laryngeal nerve. If one side only is involved respiration is only partially affected, voice has constricted vocalization, that is to say, side sounds as if forced through a tubular arrangement. If both sides are affected, then there is gradual development of dyspnoea, with a tendency to laryngismus stridulus, that is to say, complete constriction and apnea associated with laryngismus stridulus.

4. Complete paralysis of larynx, associated with recurrent laryngeal nerve

Here we have weak vocalization of the flassetot type, this involves cords and arytenoid cartilages these are thrown into disturbed condition and into extreme positions in connection with phonation, one cord passing beyond median line and glottis remaining open. Here we have a unilateral paralysis, when both cords become paralyzed we have a bilateral paralysis. Progress of paralysis is gradual, first involving abductors later adductors. In this case there is inability to speak and inability to expectorate, aggravating catarrhal condition. This catarrhal condition reacts on the paralysis until it develops hysterical laryngeal symptoms, associated with pressure on or irritation of the 10th cranial nerve, or the recurrent laryngeal nerve, examples in connection with interference with these nerves in aneurysmal conditions of aorta, subclavian pressure due to tumor, also in tubercular enlargement of bronchial glands, goitre and sarcomatous conditions of pleura.

LARYNGEAL TUMORS Found either in malignant or benign form, more commonly in former. Among symptoms we have early dyspnoea, varying degrees of aphonia, later developing marked aphonia with marked dyspnoea. These symptoms are associated with pressure or irritation, manifested by irritating cough, sneezing etc.

Among benign tumors most commonly found are papilloma developing from or in connection with true or false vocal cords, or from epiglottic ligaments, either anterior or posterior. These tumors are found in the form of a dark red mass, small, with an elevated white center representing the enlarged and elevated papillae on the cords. Sometimes these are found in the form of a large red mass, without any white portion, growing larger until all the available space is filled up in the larynx.

Fibroma. Here we have hemispherical mass of fibrous structure, tumor itself being pedunculated, absolutely separate from the normal, and only line of communication is through the pedicle, in other words, the tumor is a dirty white red, gradually becoming darker in color until it is very dark red or purple in color. Sometimes the fibroma is single, sometimes multiple, as it is localized in

the vocal cord.

Among malignant tumors the most common is Carcinoma in form of what is called Epithelioma, representing a circumscribed or limited hemispherical warty mass. In some cases simply a knotted mass of infiltrated substance on the larynx. There are two forms which this may assume.

1. Medullary - Here we find soft and generally bleeding tumors, somewhat analogous to bleeding hemorrhoids in the rectal region.

2. Scirrhus - Here we have hard firm growth representing necrotic processes in connection with the laryngeal tissue.

Sarcoma of larynx, second form of malignant tumor - Found in form of newly proliferated substance, with continuous or newly organized circulation located on a broad basis, built on solid broad foundation in the structure of other tissue. The appearance of sarcoma in larynx is that of a shiny mass, in lobular form.

Diagnosis of malignant tumors depends on;

1. Blood examination - Malignant tumorous condition is a blood condition, and a localized tumor is only a localized expression, it is an effort of nature to get rid of the condition in the blood by endeavoring to localize it, the evidence in the blood is what we call the cancer or giant cells. These cells are red corpuscles, nucleated, in the blood is what we call the cancer or giant cells. Microscopical examination of the blood we require to discriminate between giant corpuscles and giant leucocytes, the latter do not indicate any tendency to cancer.

2. Presence of minute blood tumors on skin surfaces. We must take the blood out of one of these little tumors and examine microscopically, because there are some conditions in which we have the tumors, but where we have bright little red patches all over the skin with a history of tumors we may almost be sure it is a cancerous condition.

3. Pain, a- lining

b Neuralgic and contiguous nerve field in connection with tumor is one of the diagnostic symptoms of a tumor, a benign one does not give pain unless there is pressure or obstruction.

4. Appearance of such condition after the beginning of the declining period of life, that means the beginning of the down grade processes in the body organism. In some it would be at forty, in others later. Tendency anemia of all physiological action, digestion and Al.

5. Rapid development of the tumor, with signs of

evacuation without febrile temperature, with tendency to marked enlargement of cervical glands.

6. Tendency to development of localized dropsical condition, an edematous or dropsical condition of the throat or lower part of neck above clavical on pressure we get pitting.

7. Development of local fermentive processes, there is no sign that is an typical of the malignant carcinoma as a fermentive process localized in region where the carcinoma develops in the intestine you can tell from the fermentative processes either in the abdomen or in the alimentary tube itself. There is a process to which pathologists have given the name of saccharomycesis.

Carcinomatous growth is a continuous progress of growth.

The development of these fermentive processes is a favorable sign in the treatment, because it shows we are breaking up the saccharine products and then it is the breaking down of the tumorous condition.

T R E A T M E N T

Lesions that are found are those that involve the nerve and blood supply, Sup Cor Gang Inf Cor Gang 1-2-3 Cervical, 2-2-4 Dorsal. The principal nerve involved is the 10th cranial with its laryngeal branches, principally the superior recurrent,

On the circulatory or blood side we may have;

- a. Indirect blood disturbance through the innervation of the blood vessels from the upper dorsal region, in other words, this is a vasomotor lesion;
- b. Direct lesion to the blood circulation at the clavicles, first rib, deep anterior cervical soft tissues, the muscles along the anterior neck obstructing the carotid and jugular circulation, thyroid conditions either directly or indirectly obstructing the venous return through the small veins, the innominate vein and the internal jugulars.

Among the other causes we find local weakness, or neurosis of the glottis or laryngeal muscles, either primary or secondary.

In the edematous type we have an obstruction of the internal jugular vein direct. In other cases there is a traumatic cause or exposure of the nature of traumatism, the result being irritation primarily of the mucous membrane, secondarily of the sensory nerve supply to the mucous membrane. The latter conditions are generally maintained by lesions established in the cervical region - in these latter cases there is a secondary stasis of the blood with resultant disintegration; the continued pressure on the veins prevents the fluid from getting an outlet; all of the fluid which should pass into the venous circulation being subjected to chemical changes.

There can be no morbid anatomy without chemical changes; we must have a chemical change of some kind.

The principle point in the treatment of these laryngeal conditions, therefore, is to relieve and remove the pressure, obstruction or irritation of the blood or nerve supply, or both. This means;

- a. To keep the venous blood in movement;
- b. To overcome neurosis of the nerve terminals;
- c. To relax muscular and soft tissue conditions;
- d. To complete the adjustment between the soft tissues and the hard tissues.

These are the four points we require to remember in the treatment of all of these laryngeal conditions.

In Catarrhal Laryngitis.

1. Begin by stretching the muscles of the back of the neck and adjusting the soft and hard tissues in the cervical region by articulation. See that all tissues around the 10, cranial nerve and the sympathetic chain are relaxed and be kept so, especially in

the posterior muscles in the upper cervical region;

2. Direct treatment around larynx itself, this controls congestion, inflammation and exudation of the larynx and the laryngeal muscles and also the hoarseness, huskiness of vocalization;

3. Give direct treatment at the axis, continue this treatment down along the anterior and lateral portions of the neck;

4. Get directly at the superior laryngeal nerve, in different conditions you will have to get at it in different ways, inhibit if there is an irritating cough, if there is a dormant static condition of the blood and soft tissues, you should stimulate. The best point to reach the above nerve is at the upper part of the greater cornuc of the hyoid bone. The inferior laryngeal nerve is best reached at the inner side of the sternocleidomastoid muscle at or above the point of its sternal attachment;

5. Follow the tissues along the paths of the external carotids and the subclavian circulation, as far as you can reach it, and see that the soft tissues are free from contracture and rigidity. One point that we find in most of these conditions is a knotted condition of the muscles, these seem to act as an irritation to the circulation;

6. Give direct shaking and vibratory movement to the larynx itself, that, in laryngitis, is a treatment that you will require to give carefully, as it is irritating and painful to some extent, but you can give it gradually until the patient feels better. You can sometimes produce a local anaesthesia in irritating larynx cough by that treatment.

7. Extension of the neck, this stimulates the peristaltic action in connection with the different portions of the throat, larynx, pharynx, oesophagus, etc. In connection with this extension see that the clavicles are free and soft, following extension turn head and neck around laterally, first on one side and then on the other, as far as possible, and when the head is turned laterally as far as we can get it, apply light pressure with the hand along the side of the cervical region, slightly bending the head and neck upward, pressing lightly upon the neck.

8. Apply manipulation to the angle of the jaws, around the ears, eyes, nose and forehead so as to reach all the parts or points of distribution of the 5th and 7th nerve, and the superficial blood circulation, follow this by raising the clavicles and the first ribs, then give direct treatment to the jugulars and along the path of lymphatics and

over the cervical glands of the lymphatic system;

9. Place fingers of one hand at the angle of the 3rd rib and apply pressure upward and outward, raising the arm, of the patient slowly above the head while the patient inhales slowly, keep up the pressure at the angle of the rib while you lower the arm, moving it as far backward as you can; continue this treatment to the second and first ribs and then apply it similarly on the other side, object is to elevate the ribs, pushing with your fingers upward, fix your finger in so that the rib will not drop and then move the arm down, patient inhaling and exhaling at the same time.

10. Give treatment to the phrenogastric nerve along the border of the sterno mastoid muscles, also the recurrent laryngeal nerve at the inner side of the lower part of the sterno mastoid muscle, beginning at level of the cricoid cartilage;

11. Give deep inhibitory treatment along the larynx and trachea, beginning at the hyoid, this is principally to relieve hoarseness and spasmodic conditions;

12. Keep the excretory system in thorough going order, the skin, kidneys, intestines, etc;

13. In severe cases, to relieve pain and acute inflammation, use in alternation the hotpack and ice pack, along with this check is necessary the rise of temperature by vasomotor treatment and the stimulation of the heat system, both of these from the osteopathic standpoint.

14. In severe cases keep the patient in bed (if you can) and absolutely quiet, removing all irritating conditions. This applies to light, visitors, food etc. Keep the temperature of the room from 70 to 75 degrees and uniform, keep air moist.

Spasmodic Types

Here we have a catarrhal inflammation of the mucous membrane, treated similarly to acute catarrhal type, the first point in the treatment is:

1. Relaxation of soft tissues in cervical region, correction of lesions and inhibitory pressure to control conditions of congestion and to establish the fluid circulation the laryngeal field. We generally find strong muscular contraction irritating the nerve terminals around the minute capillaries, causing capillary congestion;

2. During the paroxysm attempt to control by muscular relaxation and extension of the neck and spine. If the condition cannot be relieved in this way, then put the patient in a hot bath at a temperature of 98 degrees and when you take the patient out of the hot bath use the hot compress around the thorax, followed by the ice compress, so as to force

out mechanically the blood of the capillary system to relieve the condition of the local peripheral pressure. (The localized cause of malignant tumor is the peripheral pressure, that is the osteopathic theory of localization;

3. Produce anesis by any of the known methods that are accessible, for example, use the simple methods of irritating the fauces, that is much more effective in cases of this kind than the typical osteopathic treatment for anesis, because in the treatment of the spine it is supposed you have the irritating gastric condition, here you have the irritating laryngeal condition and you must bring your treatment into line.

The object of this is to relieve suffocating respiratory conditions, to relieve all irritation that is liable to be found secondary in connection with the stomach. This is quite an important point in all these cases of spasms;

4. Sometimes the epiglottis is entangled in some way in connection with the glottis, in this case, relieve the condition by stretching the neck backward, and giving the shaking movement, at the same time pulling up and down the structures, in the neighborhood of the larynx. Throw the head of the patient back, pull structures up and back of the neck and then pull down. If this is not sufficient, introduce the finger into the throat of the patient and give a slight stroking and vibratory movement, that is applied to the pharynx and the pharyngeal region of the throat.

5. Treat the phrenic nerve and diaphragm, so as to free the diaphragm from spasmodic tension;

6. To relieve coughing, the cough centre is in the medulla, the afferent nerves and the sensory branches of the 10th cranial nerve, the efferent nerves are the nerves of expiration and those nerves that have to do with the closure of the glottis. In this type of cough the irritation may take place in a number of ways

a- On the cutaneous surface;

b- Along the mucous membrane surface of the respiratory, digestive, liver, spleen, uterus, kidneys, that is to say, the mucous membrane in any of the visceral organs, even the brain, spinal cord, you could have the same condition.

6. The most common cause is an irritation causing a sub cutaneous contraction, involving the muscles of the neck, irritating the sensory fibres, for example, the omohyoid muscles, causing cough by traction on the larynx and adjacent structures;

d- The prolapsed condition of the larynx irritating the laryngeal nerves that are distributed to the larynx, prolapse as of stomach and intestines.

e- Direct lesion, probably secondary to some other condition, at 2-3 and 4-5 dorsal and 2-3 ribs;

f- Impacted condition of the sigmoid flexure, congested and infiltrated enlargement of the ilio-caecal region. These are the cases in which you find a great many of the coughs attributed to ovarian trouble, the ovaries can be involved, but that is not the cause of the cough, the ilio caecal region is the cause, and the ovaries may be involved through weakness caused by coughing, for example, ovarian pain.

g- Enlargement or Flabby condition of the heart.

h- Pressure from tension involving the respiratory tract, in this last case there is always the deep, dull cough going down deeper than any other of the types of cough.

i Sometimes the presence of foreign bodies in the pharynx, larynx or in the ear.

Treatment- In these cases of laryngeal cough;

1. Relaxation of the neck muscles downward.

2. Inhibition and articulation at the 2-3 and 4-5 dorsal, treatment of the direct or primary irritation, for example, sigmoid flexure, disturbance, ilio caecal disturbance, etc., treat these at the proper point.

3. General circulatory treatment,

a. 4-5 dorsal, beginning at general-circulatory center.

b- Rotation, articulation and flexion of extremities.

Croupous Laryngitis.

1. Thorough general treatment of the neck & remove all contracted muscular conditions, and adjust all of the neck structures to one another.

2. Deal with the condition as one of exudation, all croupous and diphtheritic conditions are types of exudative conditions;

This exudate is due to venous obstruction in connection with the mucous membrane, the general cause is a pressure involving the larger venous system, this secondarily reacting on the small veins, The local croup is secondary to the constitutional venous disturbance; it is not a case of a gross but of a venous constitution. We not find croup in grown people or hemorrhages in a child, these two are associated primarily with the same constitutional condition. Sometimes you find chronic diphtheria in people as long as they live, but that is the exception rather than the rule.

In dealing with this general venous condition;

a- Raise and articulate the clavicles, paying particular attention to the sternal articulation;

b- Stretch the muscles of the neck upward from the clavicular area and then downward, if the muscle is absolutely relaxed, knead if not, inhibit, then knead, roll, etc., whatever movement is called for by the condition.

c- Follow this by stimulation of the vasomotor area superior cervical gang. and the relaxation of the soft tissues around the inferior maxillary, hyoid bone, root of tongue, etc.

d- Manipulate the mucous membrane of the mouth, beginning underneath the tongue and moving backwards towards the root of the tongue and the back of the mouth. The object of this is to loosen the false membrane. This treatment can be given every half hour, if necessary, until the inflammation is controlled, or until you get the croupous structure removed with the fingers.

e- Remember if you can get that croupous membrane removed you should take it out, because in going that you have removed the cause of the irritation, and the possible cause of the infection in the child itself.

A weak lemon acid can be used as a lubricant.

f- Raise the chest and ribs by drawing the arms strongly above the head of the patient and apply pressure at the head of the ribs from the second dorsal down to the eighth dorsal, making the patient inspire as freely as possible so as to expand the chest, expel the carbon dioxide and oxygenate the blood. This will directly break down the congestion and prevent the formation of a new membrane.

g- Apply vibration on either side of the neck, around the trachea. This should be applied at frequent intervals. The effect of the vibration on the larynx, pharynx and trachea is rather to prevent the accumulation of moist substances, tends to limit down the exudate by expulsion of the moisture.

h- Do not give the patient anything to eat until the throat is clear, but if it is necessary to give the patient something to eat give the rectal feeding or the tube a step to get the food into the system without passing through mouth. Object is to prevent stimulation of salivary secretion which at that time is in a state of suppression and prevent gastric juice formation as this stimulates salivary secretion.

3- Give strong vibratory treatment at the upper

part of the sternum to keep down congestive conditions in the upper part of the thorax in connection with the thymus or thyroid glands. The former is always found to be enlarged in connection with croup and diphtheria.

In the Diphtheritic Type

In addition to the treatment outlined under croupous type;

1. Manipulate externally the hyoid bone and its muscular and ligamentous attachments;

2. Manipulate internally around the mouth, underneath the tongue, backwards towards the fauces and posterior nares, as far downward as you can reach with the fingers along the path of the mucous membrane of the throat. Give this first in the form of inhibition, then, as slight stimulation, a sort of frictional treatment to cause hyperaesthesia of the mucous membrane;

3. Where the diphtheritic condition affects the submucous tissue, give strong stimulation to the blood circulation at all the accessible points in connection with the blood circulation of the mouth and throat;

4. Give strong stimulation to determine the circulation of the blood downward from the head and neck, this treatment is used in the diphtheritic type to eliminate the toxin, to keep it from accumulating in the brain; in the submucous type membrane is a part of the tissue and it must be starved out to get rid of it.

In Phlegmonous Laryngitis.

In addition to the treatment outlined above-

1. Place patient in sitting posture, place knee between scapulae, raise arms and draw them backward, making the patient inhale until the lungs are filled with oxygen, then lower the arms down backward to the normal position. This treatment might be kept up periodically until relieved;

2. Keep patient on dry diet, that tends to create absorption.

Tubercular Laryngitis

Here we have the inflammatory condition of the laryngeal substance, the inflammation being caused by tubercular irritation, nearly always secondary to tuberculosis of the lungs. The larynx itself must be in a state of neurosis or malnutrition before the germs can deposit; this is a plain case of infection without or within. Primary to this condition may be a depraved condition of nutrition in the system, with some localized disturbance to the nerve or blood supply of the larynx, the irritation arising from pressure of the tubercular germ, either

taken in from the outside or coming from the pulmonary system outward.

In the second stage the mucous membrane becomes inflamed and swollen, and alaryngoscopic examination will indicate tubercular focalization around the blood vessels; in other words, the germs look out for a good feeding ground and get as near the blood supply as possible. These tubercles form small ulcers. In some cases the ulcers then erode and the tissues in the neighborhood is destroyed, this destruction extending gradually downward to the laryngeal cartilages. There are threestypes of the tubercular condition.

1. Catarrhal Type. Here symptoms are hoarseness, change of voice, gradually becoming practically lost or indistinct, parasthesia of the vocal organs local dry short cough laryngoscopic examination indicates profound anemia of the mucous membrane, the entire substance gradually becoming whitish;

2. Infiltrated Type First symptoms are those of catarrh, voice gradually changing until there is a complete aphonia, sense of dryness, soreness, dysphonia, slight cough and difficulty in expectoration as well as difficulty in swallowing. Laryngoscopic examination indicates marked anemia, slight tumefaction particularly around the minute areas of tubercular deposit, the formation of a grayish substance, around folds of the false vocal cords, extending gradually to the cartilages these cartilages become infiltrated, one vocal cord is generally more seriously involved than another.

3. Ulcerative type - Here is marked pain, involving mucous membrane and cartilages, both of these being notched with irregular patches of dark dusty gray color. Ulceration more marked in false vocal cords. Extension of this ulcerous condition to the epiglottis and to other structures contiguous to larynx, develops the tubercular condition. This type is most commonly found in the male sex from 18 to 25 years of age, secondary to hereditary tuberculosis or acquired pulmonary tuberculosis. Examination of this case the secretions require to be examined. In order to differentiate by microscopic examination the tubercular from the syphilitic type, in the former there is generally an enlargement of the glands, with febrile temperature as well as the laryngeal ulcerative processes. One of the principal points in the tubercular type is localized laryngeal pain.

In the syphilitic type ulceration is seldom found unless in the very last stages when the ulcers are found they do not extend so deeply or so thickly over the mucous membrane.

Syphilitic laryngitis -

This is found frequently in hereditary

syphilitic cases, or is secondary or tertiary syphilitic stages. It shows itself in mucous patches, infiltration of the papillary structure, gummatous formation of the larynx.

Symptoms that we have are change of voice, may have entire loss of voice, catarrhal and ulcerative symptoms, cicatrization, gummata on the vocal cords producing a continuous tickling sensation as if there were some foreign bodies in the larynx; dyspnea is present only when the epiglottis becomes extensively involved, pain is found only where there is extensive ulceration.

Laryngoscopic examination shows catarrhal condition of the mucous membrane, patches in form of little circular or ovoid elevations on the mucous membrane, whitish gray discolorations in patches except where the epithelium has been shed, in this case the surface is yellow with an exuding purulent substance on the surface. Gummata appears first as round projecting mass on the epiglottis, or on the vocal cords. These gummata sometimes break down, with destruction of tissue, ulceration, ulcer being covered with a whitish deposit.

Objective signs are marked pigment eruptions soars, enlarged glands and ulcerative foci that may be found anywhere over the surface of the body, particularly in the region of the blood field.

In secondary stage we find whitish ulcers on vocal cords, sometimes involving the whole surface. In the tertiary stage these erode the tissue, produce deformity. Principal symptoms in this stage is edematous condition of the larynx and the surrounding tissues.

Laryngeal Lupus. Classified by majority of writers as tubercular or scrofulous condition it is not necessarily however tubercular, it is associated with typical cutaneous lupus. Among symptoms we have dyspnea, hoarseness, aphonia with infiltration in the laryngeal substance. It is to be differentiated from tuberculosis by the surface symptoms on the face, and shown on the larynx by laryngoscopic examination lupus patches are found principally in the epiglottis, with ulceration and loss of tissue.

Treatment -

The most satisfactory method used so far is the surgical method, cutting into and gradually allowing the system to throw off the substance, another method used extensively in Europe is feeding the dying tissue with prote nucleus, injecting it into the tissue to nourish it, and compel it to throw off the waste matter. This is quite successful in many cases.

Laryngeal Leprosy.-

Here we have condition somewhat similar to lupus, a local paraesthetic condition of the surface tissue, showing itself in different ways. These are of two types - white, anaesthetic, and enlarged nodules.

The most common are the white patches (spoken of in the Bible). Second types are supposed to be a complex combination of leprosy with scrofula or tuberculosis. Leprosy is common in Hawaii, China, India, etc. It is rare in its typical form, but there are many insipient cases that are never recognized.

Among symptoms are dysphagia, dyspnoea, local red infiltration and swollen conditions of the epiglottis and false vocal cords, which become dark red or bluish in color, nodules being found on the epiglottis and false vocal cords, followed by ulceration, which breaks down the nodule into a whitish mass imbedded or pitted in the epiglottis of the false vocal cords.

Treatment - Edematous Laryngitis - Give similar treatment to the treatment in acute catarrhal type-

1. Attending particularly to nerve supply of the larynx:

2. Looking for obstructive conditions involving superior and inferior thyroid, facial, jugular or innominate venous circulation, this obstruction causes tension and edema.

3. Attend to the stimulation of the lymph supply and the salivary glands, sometimes the obstruction of these glands causing the laryngeal edema.

4. Freely articulate the cervical region of the spine so as to open up the circulation to and from the tissues and to prevent exudation into the tissues, in connection with this treat along the transverse processes in the lower cervical region to stimulate the general lymph supply.

5. Most marked symptom in laryngeal dyspnoea and this depends for its cause on the swelling of the soft parts, the point where suffocative symptoms develop. Relieve this by strong treatment over the tongue, the soft palate, by the finger inserted into the mouth, give a downward and outward movement.

6. Then give a shaking and rolling movement to the trachea, pushing the throat structures well toward the back of the mouth.

7. If the edema is due to disease of the heart or kidneys, treat the primary disease;

8. In all cases of edema give general treatment along the entire length of the spine; downward rotation

of extremities.

9. Stimulate the general circulation. Follow this by deep and strong vibration over the solar plexus and treatment to the kidneys, applied in the three different areas of the kidneys, so as to stimulate elimination. (kidney areas:

- a- superficial circulation area 4-5 d
- b- rotation, etc of limbs.
- c- vibration, deep and strong, over solar Plexus.
- d- 9 to 12 dorsal, vasomotor
- e- 13 dorsal, secretory;
- f- I-24- lumbar; elimination)

Chronic Laryngitis -

1. Give treatment similar to that in the acute type, with strong and persistent vibration in the upper part of the thorax right over the sternum, in order to keep the bronchial tubes in thorough going order so that there will be no tendency to settle down into bronchitis;

2. Avoid overheating and the atmosphere of an overheated room and hall etc. Also avoid the use of all stimulants. Keep the throat well protected thoroughly ventilated and as a preventative use the cold water douche applied to the neck every morning. Avoid excessive use of voice of voice and take deep diaphragmatic breathing exercises, to bring into play these muscles.

3. Pay particular attention to the first three cervical vertebrae, so as to free the sympathetic system and the upper branches of the laryngeal nerves. Aphonia, in its chronic form, is nearly always associated with lesions of the axis or a swollen condition of the vocal cords or a serous effusion involving the laryngeal muscles. In the last two conditions you are liable to find lesions in the upper dorsal involving the vasomotor supply;

4. In dealing with difficult breathing and hoarseness of laryngitis, which is due as a general rule to the inability to dilate the glottis on account of the swollen condition of the mucous membrane and the drying up of the secretions, look for causes in connection with the vasomotor system, that is a part of the vasomotor system that supplies the laryngeal field.

5. In dealing with pain, we must take account of infiltration of the mucous membrane which irritates the sensory nerve supply, particularly in connection with the epiglottis. Relieve the pain by treating the larynx directly and also the upper cervical region. Keep pain down from the head by treating downward from the occiput. In laryngismus Stridulus the lesions will be found in the cervical region.

Paralytic types are nearly always associated with vasomotor conditions, lesions in the upper dorsal region.

Laryngeal Neurosis-

1. Give general treatment as in laryngitis to get control of the blood and nerve supply.

2. Distinguish carefully in the diagnosis between the central and peripheral irritation if it is central the innervation of the brain and that of the spine is involved, and you will look for lesions in the superior and inferior cervical nerves; if it is due to a peripheral irritation look to the minute neuro-muscular and neuro-endothelial plates in which the nerves terminate over and around the larynx. In the latter case a local inhibitory internal treatment, followed by stimulation away from the larynx, with the larynx as a starting point will be the line of treatment etc follow, as you are dealing with a deep-seated condition which will be required to be treated like a disease of the nervous system.

3. Give thorough treatment to the upper part of the thorax, both anterior and posterior, also the diaphragm, especially to the phrenic nerve at the 3-4-5 cervicals and to the 8-9 ribs. The object of this treatment is to prevent the spasmodic conditions from extending to the intercostal nervous system and the diaphragm.

4. Have patient use freely the hot bath or the hot pack, in severe conditions, alternate hot and cold and keep air of the room moist;

5. Pay particular attention to the gastro-intestinal condition, that is, keep the conditions of constipation under control, keep bowels open, and if necessary, produce vomiting;

6. The local application of ice around the throat is valuable;

In Laryngismus Stridulus -

Place the patient in a hot bath, from 9 to 100 degrees, while the patient is in the hot bath apply cold sponging to the chest and interscapular area, unless in case the patient chills.

While the patient is still in the hot bath, pass your fingers into the fauces and give manipulation around the epiglottis, downward and upward movements, so as to relieve the epiglottis in relation to the glottis, in some cases you get the epiglottis wedged in a rigid condition of the glottis, which is the irritant producing the laryngismus stridulus.

Give patient fluid diet, diet must be limited so that there will be no indigestible elements left in the stomach, for you will find that these cases of laryngismus stridulus are due to improper diet to a large extent. Give no food having tendency to gas formation, etc.

In Laryngeal Tumor

1. General treatment is applied to the circulation of the laryngeal structures;

2. Strong stimulation of the vasomotor area, example, with patient in sitting posture, put your knee in the interscapular area and pull up the arms backward to give a good stimulation;

3. In some cases of papilloma, alcoholic sprays may be supplied or ichtholized carbolic acid sprays
Tubercular Laryngitis.

Here we are dealing with obstructed blood supply, resulting in infective processes of the larynx, the infection coming from some other portion of the body. Primary to the obstructed blood supply is an interrupted respiration, which may be directly caused by conditions of the throat or thorax or lesions causing these, the result is a malnutritional condition of the laryngeal structures. To remove and relieve these conditions we must trace the condition back through the blood supply and respiration, attempting to equalize the blood circulation and to stimulate respiration to its maximum.

The general tendency that is found in tuberculosis is towards the capillary congestion, whether this is a cause or result is unknown, it shows itself in a static, congested and obstructed circulation. The best method to prevent the further development of tubercular conditions and to keep the resultant anatomical changes from taking place, is to keep the superficial circulation absolutely free and in doing so to prevent tubercular focalization. If this can be done effectively, until by nutrition and oxygenation the system and its tissue structures can be reconstructed, tuberculosis can be cured.

1. Attend to the general health, hygiene and diet of the patient, giving the patient only assimilable and non irritating foods; make the patient eat slowly and masticate the food. Begin the dietetic treating at the lowest minimum point, have food in an absolutely assimilable form. The rest cure is primary here

One thing one ought always to remember in dealing with these diseases associated with germs of any kind, germs are not society folks, they do not live on refined foods, they like to live on a waste. If you want to starve the germs, make the patient live and diet in such a way that there is little waste.

Gradually increase the food in quantity and change from the pre-digested or freely assimilable food to food which requires thorough digestive and metabolic processes.

Another point in connection with this is to keep

the instance thoroughly free from toxic accumulations. In these cases the intestines ought to be washed out as regularly as you wash the face. To accomplish this the irrigation of the intestine is the best method. If you have a patient that will not do that, you will have to use an antiseptic treatment. Make patient drink filtrated water, or some antiseptic tablet can be used to keep up the antiseptic condition of the intestines.

In the irrigation of the intestine use hot water and use a few drops of eucalyptus oil in as much water as you can use to give the intestines a thorough irrigation.

In the deal treatment see that the cervical region is kept in thoroughly relaxed condition, both anterior and posterior, giving the treatment to raise the clavicles, arms and thoracic muscles, making patient breathe deeply so as to expand the chest and keep the blood in a thoroughly oxygenated condition. Good food, like good blood, is an anti tubercular treatment, the germ wants bad blood as well as bad food.

Treat vigorously along the cervical and dorsal regions to stimulate the vasomotor system. Give vibration along the path of the carotid to reach the pneumogastric nerve, see that the muscles along the path of the sympathetic system is free from irritation of any kind.

Look out for persisting lesions in the upper cervical, these are lesions secondary to laryngeal tuberculosis, they are keeping up the lack of nutrition and lack of nerve supply by reflexaction.

Make patient take both bodily and mental exercise the best kind of physical exercise in tuberculosis is walking, because patient would be out of doors, Patient must also be kept free from excitement.

Have patient apply principle of regularity along with the activities both bodily and mentally
Syphilitic Type of Laryngitis -

1. Give patient constitutional treatment. Remember the same dietetic and hygienic principles apply as in tuberculosis, we have the same intestinal toxemia.

2. Take some active measure to free the system from the poison. Give thorough stimulation to the lymphatics and the eliminative system. With our present knowledge we cannot eliminate without antidotal treatment.

Calcium sulphide is an antidote that is freely accessible, it is osteopathic, because it is antidotal, and is given to dissolve the combination that is detrimental to the system. Osteopathy includes

antidotes and antiseptics.

3. Keep the excretory system open so as to eliminate thoroughly from the body:

4. Give thorough stimulation to the lymphatic system for the upper part of the body;

5. Keep the mouth and throat thoroughly cleansed, apply irritation exactly on the same basis or principles as you would apply on the intestines, to keep the mouth and throat thoroughly free from these toxins.

The Mouth -

Most of the diseases associated with the mouth are caused by infective process or represent a disturbance of the trophic system or a neurotic condition. The reason for these type of diseases are traceable to the mouth as an outlet and inlet in connection with the different visceral organs. The proximity of the mouth and its appendages to the cranial field, and its close relation to vasomotion. The cavity of the mouth may be said to be the best germ incubator in the body, because it represents all these conditions that are necessary for germ development and at the same time is the channel both for respiration and food reception. The very best condition for germ development is the heat, moisture and decomposition of food found around the teeth, etc. and in the mouth. This shows why the mouth should be kept in the best antiseptic condition than any other portion of the body, because here antiseptic and germicidal conditions may be most perfect-

a- Because of the nature of the secretion of the mouth.

b- Because of the possibility of cleansing the mouth, therefore keeping it in a thorough antiseptic condition;

c- This is the portion of the body which is always physiologically active;

d- Last condition of the bacterial development is rest, in connection with the mouth there is sufficient physiological rest for the incubation of the germs, hence in the mouth germ conditions represent some perversion of the secretions, because the normal secretion of the mouth is both antiseptic and anti-bacterial. Where the body is in a low state of nutrition, disorganization, as in rheumatism, gout, etc. we find change in the secretions of the

mouth. In this case there is a pathogenic action the result of which is the development of one or more of the various types of inflammation.

Symptomatically the diagnosis of the diseases of the mouth is associated with the inflammatory conditions.

Among the subjective symptoms are:

1. Pain - The pain symptom in the mouth is always aggravated by functional activity of the mouth as in reception of food, the movement of the tongue, those of the mouth, etc. also in stimulating the secretory processes. The pain is found in all inflammatory processes, in all ulcerative processes, except in the syphilitic type. It is always aggravated by taking food, the movement of the mouth and the secretory processes. Absence of pain in diseases of the mouth indicates a gangrenous development or tendency to it.

2. Temperature - This is always aggravated in the mouth by the fact that the mouth is so close to the great vasomotor and thermic centers. The latter are located in the cervical region of the spinal cord. Some attempts have been made to explain why it is located in the spinal cord and not in the medulla, the best explanation is that it is traced back to the fish life, here as we have the cooling and heating apparatus near the gills.

3. Dryness of the mouth - This is found principally in the febrile conditions, also in cases where the respiratory processes are obstructed or unused, the patient breathing through the mouth. It is also found as a specific characteristic of the salivary secretion suspension, or of its suppression. Here the secretion is partially or entirely suppressed, the tongue red and the mucous membrane dry, the palate smooth and glistening, the functional movement of the tongue and mouth is difficult. This is found in neurasthenic condition in hysterical types and in low vital condition of the body. In these cases the secretion is impaired by some central diseases. In those cases where the original cause is a central condition there is a similar dryness in the nose and eyes. We also find this dryness of the mouth, nose, etc. in diabetes, febrile conditions and gastric disturbances.

From the standpoint of treatment it is good thing to have thermic centres in the spinal cord when we deal with febrile conditions, because the centres are easily accessible.

The physiology of the organism cannot control the centres from the brain, that is why it is so hard to control fevers, mental excitement will tend to

increase the fever, because that is an added aggravation to the spinal cord.

From the osteopathic standpoint it is a decided advantage to have the centres in the spinal cord because it can be kept under control until the danger passes away.

On the objective side - the symptoms or signs are those that are brought out by inspection and the palpation referring to such points as color of the mucous membrane, the presence of changes in structure in connection with the tongue, mouth and other parts of the structure. The normal color may be either increased or decreased, we find pallor in anaemia, increased redness in inflammation, yellow discoloration in cyanosis, bronzed color of mucous membrane of tongue, in Addison's disease. Eruptions are usually found in the mouth before they make their appearance on the cutaneous surface. This is especially true of measles, the measles rash may be found on the soft palate many hours before its development on the skin, similarly in small pox and chicken pox, also in scarlet fever where we get the bright red hue on the back part of the mouth. In making an examination of this kind we require to use the pharyngoscope and the laryngoscope in combination.

The shape of the mouth is sometimes of service in diagnosis, where swelling is found in connection with changes in the structure of the mouth, like bulging of the floor of the mouth or depressions associated with ~~and~~ alteration in the glandular structures or changes in the tonsils. In bone diseases the teeth represent an important diagnostic sign, as swelling or enlargement around the dental arch, increasing the height of the arch in connection with the adenoid developments.

The odor of the mouth is also a diagnostic point, a fetid odor in inflammatory conditions, aggravated in the ulcerative processes, also found in mercurial stomatitis and in gastro-intestinal disturbances.

One point you want to remember about mercurial stomatitis is, what is called the amalgam filling in the teeth cause a continual precipitation of mercury in the mouth, that frequently has a bearing not only on the odor of the mouth but its secretions; the increase of the salivary secretions is often due to that preparation and often aggravates and causes disturbances.

We also have a fetid odor in gastro-intestinal disturbances, the latter case however is modified, the odor changing with the food, that is a good way for testing whether the odor is from the mouth proper or from the food part, for instance, if you put the

patient on milk diet you will get the degenerated milk odor. Also notice if cough arises after patient has taken a different kind of food.

Hemorrhage of the Mouth -

This is found in connection with purpuric conditions, particularly in hemorrhagic types of purpura (bleeders disease).

The most important hemorrhage that we find are the submucous, associated with severe forms of purpura and scorbatus. We also find hemorrhage in the ulcerative processes, that tendency to hemorrhage creating the blood condition which promotes abscess formation.

In pernicious anemia there is a capillary oozing of the blood from the mucous membrane. This is also found in low typhoid states particularly accumulation of blood taking place around the teeth or on the tongue, and in ~~max~~ the febrile conditions of typhoid we have what is called "sordes" in the mouth; this is caused by the hemorrhage condition. Another characteristic of the same typhoid state is cracked lips, if treated properly it is a good symptom in typhoid fever.

Modification of the Salivary Secretion -

Increased salivary secretion is found in all the inflammatory processes and this increase of saliva should be subjected to examination. In order to get the saliva for examination, wash out the mouth with a weak alkaline solution and then stimulate the salivary glands by using a weakly diluted acid applied to the glands with a small glass rod or tube. The normal salivary secretion in twenty-four hours amounts to about three pints, is of a bluish white color and slightly stringy in consistency. The white represents the lipid secretion from the parotid gland and is controlled by the cerebro-spinal system.

Allow the fluid to settle down; when it is settled, it forms two distinctly marked layers, the upper layer being clear and white, the lower cloudy and representing mucin. Microscopic examination indicates the presence of salivary corpuscles larger and more granular in their nature than the leucocytes; in addition squamous epithelium in the form of large polygonal cells; fungi and yeast elements; the fungi being found both in healthy and diseases conditions of the mouth. In the healthy condition of the mouth are also found numerous micrococci, diplococci, pneumococci and lanceolati.

One point you want to remember about mercurial stomatitis

Chemical examination of the salivary secretion gives a small amount of albumin with albumose as a

ferment, mucin and the sulpho-cyanide of potassium. In diseased condition where the salivary secretion is diminished, the sulpho-cyanide of K is the most important element that is present from chemical standpoint. It is best detected by using a solution of chloride of iron.

Ferment is detected by mixing the salivary secretion with some starch elements artificially, keep mixed solution warm until there is a development of rare sugar, if ferment is present in the secretion. That is the normal process that would take place in the mouth.

Nitrates are detected by adding a small quantity of the secretion to starch, and the starch when used in this form, would be dissolved in water, not in the solid form, together with KI and diluted with H_2SO_4 , if nitrates are present, the combined solution will become distinctly of a bluish color.

In the Catarrhal Stomatitis, the salivary secretions are increased, become acid in reaction and there is an excess of epithelial structure.

In Ulcerative Stomatitis, there is also an increase of secretion, alkaline in reaction dark brownish color, with degenerated epithelium, leucocytes and fungi.

In Rabies and glosso-pharyngeal paralysis there is also an increase of salivary secretion and the reaction is acid.

In Diabetes, gout, rheumatism, mercurial poisoning it is also increased and the reaction is acid.

This is one of the detrimental points of the amalgam in the mouth where you have the persistent acidity of the secretion, due to continued precipitate of mercury from the amalgam, the acidity of the secretion interferes with the action of the ptyalin and the two make a sugar and acid the acid causes the albumin in the mouth to degenerate.

Urea is found in nephritis and uremia.

The amount of sulpho-cyanide of K is important, because it depends on the activity of the nutritive processes in the body, it is increased abnormally in the acute inflammatory diseases of the mouth especially. Also in the first stages of cancer, pulmonary tuberculosis, rheumatism, gout, disturbances of the liver and the recuperative stages of typhoid fever.

When power of nutrition is diminished, the amount of sulpho-cyanide of K is lessened, as in low forms of typhoid state, late stages of cancer, pulmonary tuberculosis, chronic diarrhea, dysentery, catarrhal jaundice, passive congestion of the liver.

What would be the disadvantages to the system with

the lessening of the amount of sulpho cyanide of potassium? In the early stage of tuberculosis exsicc, etc. there is attempted nutrition on a high scale, but in the latter stages the secretion drops down below normal and the patient would be liable to collapse through lack of nutrition.

Particular Forms of Diseases of the Mouth

1. THRUSH

This represents a condition marked by the presence of a parasite. Some say it comes from or is associated with milk. Here there is an increase of the salivary secretion, and in reaction. Appears in the form of small patches on the mucous membrane, patches ultimately coalescing; if condition persists continues, forming a large mass. The parasite is a segmented organism, capable of division and subdivision.

Another type of parasite is the *Leptothrix buccalis*. This is also segmented and appears in the form of a long string or ribbon shaped germ, with constrictions at the segment. It also attacks the mucous membrane, but differs from thrush in this, that it is found in bundles and is found in close proximity to the teeth.

The change in the gums represents a change in the mucous membrane in connection with the inflammatory processes. This is found particularly in some types of poisoning. In tuberculosis there is a hyperemic condition, represented by a red line around the gums at the point of junction with the teeth. This is perhaps associated with a localized inflammatory process. A similar condition is found in diabetes, carcinoma and scurvy, more aggravated in the early stages of diabetes, in the later stage you will find a white line and a separation of teeth, from gums.

Scorbutic condition of the gums, with a tendency to hemorrhage and the development of ulcers around the teeth, represents a syphilitic condition found in chronic diseases, also found in lead poisoning. Typical lead poisoning in the acute stage is a blue line or line on the gums around the margins of the teeth preceded or accompanied by a large number of dark spots on the mucous membrane.

THE T P T H

It is important to examine the teeth, particularly in changes taking place in the brain substance, hereditary insanity, proteinism, etc. gastric or gastro intestinal disturbances. Teeth conditions are often associated with defective sensation, also with the eye, ear or nose. These conditions of the teeth are the immediate causes of the neuralgic headache and of most of the types of the infantile stomatitis.

Fitting in connection with the surface of the teeth, the loss of enamel, represent degenerative changes, which is the starting point of necrotic processes. When the necrosis is established, infective processes are associated with the mucous lining of the mouth or gums. Sometimes this produces hyperemia, sometimes anemia, in many cases ulcerative processes.

In most cases the color of the teeth becomes dark, due to the loss of the surface of the surface enamel.

Erosion of the teeth is found particularly in gout, rheumatism and rickets. The wasting or loss of glossiness of the teeth on the lateral surface being also associated with the same diseases. In the latter stages we also find a tendency to same diseases. In the latter stages we also find a tendency to the development of grooves around the surface of the teeth.

In gout there is nearly always found a marginal tooth inflammation, later there is necrosis development and sometimes calculi formation takes place, especially around the labial or external portion of the teeth.

In congenital syphilis the upper incisor becomes small, the middle lobe atrophies, the tooth only being left at the end of the tooth, Hutchinson teeth.

In the teething process of the child is really a process of tooth eruption and is generally associated with some general or reflex nervous symptoms, as in gastric disturbance, feverishness, loss of appetite, convulsions, etc. These may be due -

a- To the fact that the teeth cannot break through the mucous membrane, therefore pressure results the pressure being on the sensitive nerves around or at the root of the teeth, causing these reflex conditions.

b- May be due to some interrupted condition of the blood supply; in this latter case we always find head symptoms, i.e. brain disturbances, eyes rolled up.

The reason for this is that the teeth and the brain get their nerve supply from the same source and any interference with the teeth will react on the brain and any interference with the brain will react on the teeth. That is the reason why you will find in all these children who are deficient in brain or mental development or both an involvement of the teeth. You will find all kinds of defects, because of the correlation of the blood supply of the brain with the teeth. That is the reason why teething children are very susceptible to brain disorders.

One point in particular in should be noted in children of that age, that is the diet, which should be adapted to their age. If the children are teething

they should be dieted for the development of the teeth and not the brain. There is economy in the nutrition and the body produces material for all the processes of the body; if you feed a child for muscle while teething the child will develop gastric intestinal symptoms, or something of that sort. It is very important to attend to the diet. A child should not be fed on milk until it is three or four years of age, the average child at six months should be chewing something. You will never get salivary secretions developed in a child until it begins to chew. Give the child something approximating the food of the grown up people, that will develop the mouth, gums and salivary secretions.

The development of the salivary secretions is most important- a child susceptible to measles, scarlet fever, etc. will fare better as it will get the antiseptic qualities of the salivary secretions.

There is a certain hereditary influence transmitted to the child which makes it capable of digesting anything the parents can digest.

The slow development of the teeth may be associated with a number of conditions, may indicate a rickety tendency, it may be easily determined from the condition of the bones and other development of the body of the child.

2. It may indicate an anemic condition associated with rickets; there is nearly always anemia, but it does not always imply rickets.

3. It may be associated with gastric or gastro intestinal indigestion. This is a type that we find nearly always associated with epileptic conditions and there we have a very slow development of the teeth. These are the three main conditions that we find in connection with the development of the teeth.

Types of Diseases of the Mouth

These are classified under the head of STOMATITIS. Here we have an inflammation of the mouth, that is, of the mucous or submucous tissue, associated with or due to some chemical, thermal, inflammatory or infectious irritation or associated secondarily with gastric or gastro intestinal disturbance, scarlet fever, measles, diphtheria, pulmonary tuberculosis artificial dieting unhygienic conditions either of the mouth or of the adjacent portions of the body or whole body.

The lesions found in cases of stomatitis involve;

1. Directly the innervation of the cervical region or in the upper cervical region;

2. Lesions involving vasculature, found in the upper cervical region, at the upper dorsal, involving either the vertebrae or the ribs or muscular system.

3. Lesions are found in the area corresponding with the primary irritation, as in the stomach, we get the lesions in the stomach area of the spine or ribs.

There are different varieties of stomatitis; Simpel Type - Here we have a catarrhal condition, found principally in children who have the catarrhal constitution, or in connection with irritation of nasal catarrh or secondary to gastric disturbance, or as a sequel to measles, scarlet fever or difficult dentition. It is also found in an adult, associated with the excessive use of alcoholic stimulants or tobacco or snuff. In these cases the inflammation is not limited to the mouth, but involves the gums, tongue, nose, throat, and probably other organs as well. It is recognized by such symptoms as pain, local pain in the mouth itself, inability to take food, fetid odor from the mouth. This latter symptom is nearly always associated with the formation of minute abscesses on the mucous membrane of the mouth. The formation is diffusive and congestive membrane being red, hot, painful, pain being increased on motion of the mouth, increased flow of salivary secretion, enlarged follicles on the tongue, enlarged gums, swelling of the mucous membrane. The increased salivary secretion is acidulated, this acidity of the saliva produces a membranitis, also a dermatitis around the chin which is due to the increase of the saliva, which is flowing out of the chin. The membranitis generally extends to the outer mucous membrane of the body, which are markedly irritated.

This type is sometimes called Stomatitis Pythematosa, so called because of the enlarged red papillae on the tongue, and the minute vesicles on the inner side of the cheek and lips, representing the elevation of the mucous follicles.

Microscopic examination indicates the presence of degenerated epithelium, consisting of fatty degenerated tissue, blood corpuscles, micrococci and the *Leptothrix buccalis*.

Of course that could be seen from the standpoint of general diagnosis that these germ foci are the cause, but you will remember that these are found in the mouth when absolutely normal, it only means that the degenerated spot in the mouth is a nidus or nest in which the germs found in the healthy part of the

mouth lodge and grow. This is sometimes called catarrhal stomatitis, or erythematous or lepla.

Apthous Stomatitis - sometimes also called Follicular. In this type there is an eruption consisting of single or multiple vesicles, located on the edges of the tongue, the inner side of the cheek or lip, very quickly becoming round or ovoid discrete patches.

These spots are slightly elevated with a reddish point and surrounded by a whitish yellow base, on the outer side of the base is a yellow areola. Here we have a small grayish white spot on the superficial layer consisting of exudate of fibrin and leucocytes. It is found principally in children in connection with difficulty dentition and digestive disturbances. The predisposing causes are found in certain seasons, conditions of malnutrition, tuberculosis, gastric intestinal disturbances, anemia, acute infective processes, principally measles. In the mouth we find the localized spots, the toxin being carried to the roof of the mouth and the gums in connection with the circulation, the exciting cause being poisons that are produced in the system in connection with the predisposing causes.

The starting point symptomatically is an inflammatory redness on minute point of the mucous membrane, these points are very tender, so that the slightest action causes a sharp stinging pain, with difficulty in making food. Then there is the development of catarrhal spots in proximity to the apthous spots. Here there is great pain, in an excessive flow of salivary secretion, difficult deglutition, modified respiration, slight febrile symptoms, heavy breath, furred tongue, restlessness and the tendency to either constipation or diarrhea.

In some of the infectious diseases these apthous spots tend to become confluent. They are frequently found in scarific, a disease due to toxin, infants in the form of large white patches on both side of the posterior part of the mouth. Sometimes this ulcerates and establishes a sore, which involves the teeth and the bones. This you require to carefully differentiate from hereditary syphilis and also from rickets. This does not necessarily involve the rickets or the syphilitic condition. Sometimes we find this condition in children after the eruption of the lower incisor in what seems to be a healthy condition of the body. These spots or patches may if not attended to break down and ulcerate, then infective processes follow.

This condition is always found by infection from what is called mouth disease, the infection taking

place through the milk of the animal suffering from that disease. In this case there is a large amount of swelling which may extend to the entire mouth and upper part of the throat, the ulceration resulting in a softening of the entire soft tissue. In these cases there is always a history of infection, if you can trace it up.

One typical symptom that is found in these cases is that of diarrhea and swelling.

The course of the aphthous stomatitis in an uncomplicated case is for three to ten days, but in badly nourished children with unhygienic conditions and the malnutrition of the body itself. The constitution of the child is not able to throw off.

MEMBRANOUS STOMATITIS - Sometimes called crepous stomatitis, here we have a condition of inflammation much more severe and extensive than in the aphthous type, because there is a false membrane formation. It is seldom primary, but nearly always secondary to diphtheritic conditions. It is to be distinguished from diphtheria by the fact that it affects the superficial membrane only, the coagulation necrosis which produces the membrane affecting only the mesoepithelial layers. In other words the distinction between scurf and diphtheria is that scurf is just as much diphtheria as diphtheria itself, the difference is that in scurf we have only the surface mucous layer involved, while in diphtheria you have the submucous, that is the only reason why diphtheria is more serious than scurf. Scurf is an infection as dangerous as diphtheria from the standpoint of infection.

The origin of this stomatitis is specific - that is, it is associated with infection from the diphtheritic toxin or germ or the streptococci, or from toxins of gonorrhoea and syphilis. In these last two cases you have the exciting cause of its origin.

The symptoms are very much the same as in the aphthous type, except that salivation is very much more increased and it creates a painful and distracting sensation in the mouth.

ULCERATIVE OR FETID STOMATITIS - Here we have a specific ulceration following inflammation of the mucous membrane of the mouth and the gums, associated with abscess formation or the tendency to the abscess, this tendency marked by the fetid odor in the mouth; also marked by the tendency to

develop, extend and deepen. Also found in children, particularly between two and five years of age, following after the first dentition. It is also found in epidemic or endemic form in families in the slum districts. It may be found also in connection with anthon's stomatitis.

Among the predisposing causes we find the damp weather particularly the spring and fall season, unhygienic condition, particularly associated with the lack of proper ventilation and proper type of food, courses of the bath. It is sometimes found endemic in some of the camping grounds where unhygienic conditions are found among the adults, in the soldier's life; etc, where person lives near surface atmosphere.

The exciting cause is toxin which may be communicated to the tooth by the use of milk from an animal which has had the foot and mouth disease; or the toxin that develops with such conditions as scurvy, the persistent use of poisons, particularly such poisons as (1) lead, (2) phosphorus, (3) mercury; also for water supply forced through lead pipe. Also found in the course of any disease, particularly of an exhausting nature, as chronic diarrhoea. It begins at the lower borders of the gum opposite the lower incisor teeth, gradually spreading backward to the surrounding gum or membrane. Latter first becomes congested, then red and swollen, gums becoming soft and spongy with a tendency to bleed and oozing, leaving behind deep ragged ulcers which are located principally around the teeth. Following this we have the loosening of the teeth, inflammation and degeneration of the alveolar periosteum and necrotic conditions of the bone.

Among the symptoms we have pain, increased by manipulation and deglutition, profuse salivation, tongue swollen and coated, teeth marks on the teeth, digestive and intestinal disturbances. In severe cases the gums become atrophied, teeth fall out, and there is a great tenderness of the submaxillary glands, sometimes necrosis of the jaw bones. The excessive salivary secretion becoming acid in reaction is exciting cause.

The general symptoms of lowered vitality, such as nausea, vomiting and diarrhoea.

These ulcers are sometimes secondary to gastric and uterine disturbances, especially in connection with venereal interferences or during the early stages of syphilis. In these latter cases the ulcers

are much deeper and the secretions much more profuse, without pain. This condition is usually an acute disease, running its course in about a week.

In the neurotic subject, however, it becomes chronic, and there are periodic herpetic eruptions which alternate, one series following after another in the chronic condition.

MUCOSAL STOMATITIS - Here we have an inflammation of the mouth and salivary glands, caused by the excessive use of mercury, or its precipitation in the mouth in connection with the presence of mercury in falling teeth.

The predisposing causes are occupation, for example, it is found with those who work with mercury. There is also a certain constitutional condition as another predisposing cause, which makes the system susceptible to the smallest amount of mercury that can be taken into the system. Here is one of the indefinitely conditions that can never be explained - it is in connection with persons who have never used mercury and have no traces of it in connection with fillings. The only possibility is that it may be some hereditary condition and even that is not known, it is but a surmise, but the constitutional condition is in these people but cannot be explained.

The exciting cause is either inhalation or absorption of mercury and also in ingestion in connection with medication. The particular point is that it seems to have an affinity for the gums and the salivary glands, in which we find set up an inflammation with painful, profuse salivation. There is a metallic taste in the mouth, the gums red, swollen and tender, the tongue blue and swollen and teeth marked along its edges, very tender to the senses of touch and irritable, tongue coated with a heavy whitish covering, sometimes this covering becomes bluish white which is the typical mercurial syphilis. The tendency to hemorrhage of the gums and the other peculiar metal odor that comes from the mouth. Here we have:

- a- An irritative mercurialization as the foundation.
- b- A mercurialized stomatitis.

In other words, you have both the mercurial condition and the stomatitis in combination and that is the point to remember in treatment, because you will have to treat from both standpoints.

LEPROUS STOMATITIS - In the constitutional leprosy there is often a condition of the mucous membrane

of the mouth itself in the form of leprous ulcers, or the typical leprous nodules which later ulcerate. These are to be diagnosed always by their association with the leprous condition of the skin, and a microscopic examination of the ulcerous deposit.

Another type of stomatitis is a kindred nature to the leprous is the stomatitis of glanders, in which we find ulcerative conditions of the mucous membrane of the mouth and the salivary glands and the swelling and infiltration of the glands, secondary to the extension of the condition from the naso-pharyngeal field.

PARSITIS STOMATITIS - also called stomatitis *succosa* or thrush. Here we have specific inflammation representing a contagious fungoid disease, in which there is found the rapid development on the superficial membrane of the mouth small patches of a soft, which slightly adherent nature; these patches are really small flakes adherent to the surface mucous membrane and found originally in discrete form, but with tendency to coalesce and spread over the entire mucous membrane of the mouth and also in severe cases over any mucous membrane of the body. There are exceptional cases in which these thrush patches have been found in every mucous membrane of the body, even in the brain.

The predisposing causes are the unhygienic conditions of the child or of its environment, gastro-intestinal disturbances, congenital syphilis and tuberculosis, rickets, and any of the infectious diseases. Sometimes it is found in the adult, particularly where the nutritive or vital condition is very low, as in the last stages of tuberculosis or cancer, in any of the low fevers, in chronic tuberculosis and diabetes. When found in the adult it is always associated with typhoid state.

The exciting cause is a fungus belonging to the type of *saccharomyces albicans*, or of any form of micrococcal germ. These fungi are supposed to develop by some in connection with flowers or plants, settling in connection with the catarrhal soil and causing the irritation that produces the thrush condition.

It is a typical parasitic fungus, its first form is that of a branching of apical fibres from the ends of which there is a proliferated development of ovoid cells, in connection with a budding process. That is to say, these little cells are like flower buds on the top of a little branch, that first enlarges, then softens, then swell out to assume the flower form. These branches dip down into the submarine structures and into the deep structures of the mucous glands. The development of the

parasite depends on two conditions:

1. The altered condition of the mucous membrane and the more or less degenerated nutritive condition, in other words, the reason of the catarrhal soil is the soil in which the parasite develops;

2. The parasite grows only in an acid medium, hence the alkaline condition of the salivary secretion must give place to an acid condition. The foundation of its development, therefore, is to be traced to

1. Catarrhal stomatitis;
2. Acid fermentation.

Now, note the point particularly, because this is the only connection milk has with thrush. You will find in many old writers a statement ~~from~~ milk that thrush is a disease that is communicated from milk or developed from milk. The only connection milk has is that when it acidifies in the mouth it simply furnishes a medium, so that it is possible for thrush to develop in the mouth of the child.

3. The acid fermentation of the milk of the remnants of the food in the mouth, is rendered possible by unhygienic conditions, poor nutrition and bottle feeding. The reason why bottle feeding may be regarded as a cause is that it is artificial feeding, classed with artificial foods and when there is a bad bottle condition it will tend to develop the thrush condition.

4. An excess of saccharine substance tends to impair the nutritive condition of the mucous membrane, for example, like the impure candy or food and also by fermenting tends to produce the acid condition of the salivary ~~gland~~ secretion. The child can use sugar but it should be milk sugar, the average cane sugar we get is not fit for nutrition.

5. The fungoid growth itself tends to produce more acid, this forms a medium for the still further growth of the fungoid patches, This is the reason why from the standpoint of treatment some antiseptic and anti-parasitic substance should be used to wash out the child's mouth to prevent the continued growth of the fungus. The appearance of little patches in the mouth, as small patches of curdled milk simply means that these are the soil in which the parasite grows, they do not represent the parasite itself, but simply the point of deposit and where they accumulate. (Spore latent condition of the germ, like the butterfly in the shell and the spore may lie dormant for a long time, some claim that we have evidence that it lies dormant a thousand years in connection with a piece of garment, etc.

Symptoms - The localized symptoms are associated

with stomatitis rather than the thrush, that is here we have a condition analogous to the mercurial stomatitis. We have the stomatitis and the parasitic condition, the two coexisting. Among the symptoms we find heat dryness of the mouth, the dark livid color of the mucous membrane, indicating stagnation of the blood. The patches are slightly elevated and are found first on the tongue, as a general rule and then on the gums, with a tendency to spread to the inner side of the lips, cheeks and palate and to extend to the tonsils, pharynx and stomach, or anywhere there is mucous membrane. At first there are white cord-like patches or flakes, then yellow or brownish patches on account of the hemorrhagic condition. At first they are adherent, then they loose, the surface underneath being smooth, except in gastrointestinal diseases, for example, when they remain adherent and dip deeper down into the submucous tissue. Microscopically there are irregularly branching acellular fibres with the torular cells at the tip of the bacillus, and in the interlacing of these fibres are found leptothrix micrococci and broken down tissue.

The constitutional symptoms are those of the wasting type, as emaciation and of the order.

GANGRENOUS STOMATITIS - This is a condition which rarely found where it is found it exist in children who are not well nourished and more frequently in girls than in boys between the ages of two and five years. It is an endemic disease in some of the low-lying regions of Holland, also in some larger cities where there are overcrowding and low constitutional conditions. Sometimes it is secondary to measles, scarlet fever, typhoid fever, small pox and whooping cough. It is supposed to be due to a parasite; there has been no parasite found which can be called the parasite of this condition. In the gangrenous deposit the diphtheritic germ and the strepto- and staphylococci have been found.

The condition itself begins in an ulcerative stomatitis followed by sloughing, affecting the inner side of the cheek and the gum. Path. The first appearance is in the form of a little dark red spot, supposed to represent a condition of thrombosis; this spot becomes purple in color and then there is swelling and infiltration on the surface, with hardening and the appearance of a small blister on the top of the hard nodule; the nodule breaks down, ulcerating deeply into the cheek sometimes

perforating, extending into the jaw and resulting in necrosis; the blood changes probably represent infarction. Sometimes the condition spreads by continuity and aspiration into the bronchial tubes and lungs, setting up a bronchial pneumonia. Then some cases there is metastatic development in other portions of the body, particularly in the stomach and intestines. The mucous membrane is first involved, when the ulceration develops the submucous tissue becomes involved and then we have the morbid anatomy of the nodule formation. In some cases there is an induration of the skin around or in the neighborhood of the nostrils.

The most common point at which the gangrene deposit starts is at the junction of the two lips on the inside. In this case there is an edematous development and the gangrenous patches multiply leaving behind black patches. The predisposing cause is a low state of nutrition, accompanied by development of the gangrene is a high febrile state, so that you have side by side the low typhoid condition and the high temperature. Following this, there is edema, and the involvement of the lymphatic system, followed by diarrhoea, with a tendency to sepsis in the form of septic lobar pneumonia and when you have that condition the patient is probably beyond help, because the sepsis has become so extensive that it is almost impossible to pull the patient out of it. Lesions are located;

a- In the vasomotor area, either in the upper dorsal or upper cervical sympathetic - that is to indicate that it is not spinal, but sympathetic, that is vascular;

b- In the upper or lower cervical region spinal lesion field.

c- In the atlanto-occipital. 5-7-10-11-12 cranial nerves.

d- Existing lesions in the field of weakness - some other portion of the body. This applies principally to cases in which the stomatitis is secondary to some of the acute infectious diseases. In that case you will be able to find a splanchnic lesion, because the splanchnic system takes in the neck and throat and mouth as well, as the stomach and intestines.

Treatment -

A general point in the treatment of stomatitis is to free the circulation of the blood, and lymph generally. Secondary to this the freeing of the jugular circulation and the localized lymphatic circulation, so as to remove all excess of fluids and wastes or accumulation from the local point. In doing this, the capillary and lymphatic system

must be attended to so as to prevent resultant decomposition, and the precipitation of elements that should be dissolved in the blood. In this doing -

a- The capillary circulation must be kept free; general circulation, etc. downward.

b- All of the channels for the return of the blood to the heart and lungs must be kept free;

c- Local pressure on the nerve terminals must be removed;

Now, these are the three main points that require to be attended to in the general treatment.

d- Give thorough vasomotor treatment in the general vasomotor areas;

e- Free all muscles along the sides of the neck by kneading, twisting or vibration movements, etc.- raising the clavicles and the upper three ribs, that frees the arterial blood circulation to and from the mouth;

f- Give treatment along the spine in the splanchnic area; downward object is to provide for thorough elimination. It is better to give the articulation on the face, that frees, the spine. These are the six general points applied to all the general types of stomatitis.

I. In THE SIMPLE OR CATARRHAL STOMATITIS /

1. Remove the exciting cause, attend to the hygiene of the mouth, keeping the mouth thoroughly cleansed, using antiseptic solution. Always after using an antiseptic use cold water in the mouth, so as to & take out all of the sediments that may be there.

Attend to the diet of the patient, giving nutrition that is easily assimilated, for example, a light milk diet, always taking the precaution to use with the milk diet lime water.

2. When the gums become spongy on account of the accumulation of fluid, it may be necessary to use some astringent substance to cause contraction. acetic acid in vinegar, etc. The reason for that is, there you have a point where the vasomotor system has very little control here you get that excessive fluid in these spongy gums which is almost always sure to continue as a chronic condition, if it does not go on to a suppuration. The best astringent is tincture of myrrh and rhatany in equal parts. You can assist this astringent action by light soft kneading treatment with the fingers or tool.

3. Give light treatment to the entire cervical region, downward, especially around and underneath the angles of the jaws, in order to produce equalization of the blood circulation. In addition to this, light rotary treatment of the head on the

atlantal articulation.

5. Manipulate over the mucous membrane of the mouth, backward towards the root of the tongue, Simple pressure here is the best, lay down the fingers and press backward.

IN THE APETHOUS TYPE-

1. Attend to the hygiene and diet of the patient, as in the other type. In this case an antiseptic solution of chlorate of potassium may be used, because it has a tendency to prevent the aphthous from becoming ulcerated.

Only liquid food should be used and given to the patient, in order to prevent any irritation of the mouth. In all those stomatitis cases it is probably of some advantage in severe conditions to use predigested food, because in all those cases there is tendency to excessive salivary secretion and the less stimulation there is to the salivary secretion the better, so it may be necessary to use predigested food or rectal feeding.

An important point to remember is, that you get a person who has been going on regular diet for years and he gets sick and we put him on a diet of fruit, grape juice, etc. It is like taking an inveterate smoker and putting him to bed without his pipe. Reform people in health not in disease. It would be better to take an article of their ordinary diet and predigest it and give it to them; it is not the proper time to reform diet when the patient is sick and suffering from severe diseases. There is less danger than you would change the diet materially in that way. There are many cases that do not get well so soon on account of diet eccentricity of the doctor or nurse. You are changing the constitutional characteristics of the diet at the time when the body could not bear it.

2. Pay particular attention to the circulation of the blood, treating it through the vasomotor system locally.

3. Look out for digestive disorders, try to regulate same.

4. Treat the nerve supply to the local part affected, and pay particular attention to the three branches of the facial nerve, you are very liable to get neuralgia conditions or semi-paralytic conditions following aphthous stomatitis.

IN THE ULCERATIVE TYPE - Attend particularly to the hygiene of the patient, and isolating the patient until you are absolutely sure there is no danger of infection. Remember that the ulcerative type is

developed in the course of diphtheria, syphilitic gonorrhoea conditions, it is an outward ulceration expressing the toxic disease and the patient is liable to transmit the infection by food, clothing etc. Care must be taken to use antiseptic precautions, paying particular attention to the mouth and teeth, so as to prevent the development of possible necrotic processes.

2. Pay strict attention to the diet, in this case if the milk agrees with the patient, it is a good diet, but never lay down the rule that milk is a good diet for ulcerative stomatitis or typhoid fever, it is a good diet for a patient who is used to taking milk, but not for one who cannot take milk or one who loathes milk.

3. Treat the blood supply to and from the mouth and give direct stimulation to the nerve supply, so as to establish and maintain the trophic conditions. If the normal trophic condition is present ulceration is impossible, ulceration is the result of non-trophic conditions.

Trophic influence comes from the cerebro-spinal side, located in the anterior horns of the spinal cord. I - 40. None of the cranial nerves are trophic in distribution, the trophic centres originate in the anterior horn of the spinal cord, and are trophic in control.

4- Pay particular attention to the intestines through the vasomotor field see that the patient is kept free from constipation.

PARASITE TYPE OR TRUSS-

1. Attend to the cleansing of the mouth with an antiseptic that is alkaline in reaction, as lime water.

2. Attend to the diet of the patient, excluding from the diet all sugar and starchy food. In case of a child that is using milk remember that the milk ought to be mixed with lime water.

When the patches in the mouth become extremely irritating you will get the best results by using potassium chlorate simply to soothe the mucous membrane, just the same that you would use calcinated water on the skin where itching is present.

3. Keep the gastro-intestinal field open removing all irritation, if necessary by irrigation, that is to say, irrigate the intestines to get the liberations of the intestine from all irritants which would be absorbed and in the child would develop brain symptoms. These irritants are part of the undigested milk. If necessary use a little eucalyptus oil in warm sterile water.

GANGRENOUS TYPE

1. You require to be careful to quarantine the patient, There is always some infection behind the condition, tuberculosis or diphtheria in character.

2. Keep the mouth well cleansed and keep the sloughing discharge well removed, using a carbolic acid solution as an antiseptic in connection with the removal of the sloughing; if the sloughing becomes extensive it may become necessary to remove it by amputation, or some other of the methods to take away the sloughing.

3. Treat the case otherwise as a case of simple stomatitis, paying particular attention to the circulation and elimination, and one other thing you must pay particular attention to in the gangrenous and ulcerative types, is to keep the circulation from the head thoroughly opened up to prevent any of these accumulations from getting into the brain.

IN THE MERCURIAL TYPE

1. Cut off all mercury used by the patient and eliminate all you can.

2. Treat to keep the bowels loose in the diarrhoeic condition, so as to keep up elimination.

3. Frequent use of hot baths and vapor baths, make the patient sweat all he can, even if you must give him a good dose of red pepper; it is better to sweat in connection with the pepper than to leave the mercurial condition. Alcohol vapor bath and steam bath are not good in this case, as they tend to resorption, vapor bath tends to elimination, in rheumatism, etc., alcohol vapor bath is excellent along, but do not combine the two.

The mercurialization will be discussed later in connection with the subject of auto-intoxication.

NURSING MOUTH -

Found in the nursing baby. This is a very light stomatitis found in the form of little red specks or very delicate red streaks in the mouth; there is no pathology or symptomatology aside from this.

Treat the neck very lightly every day, from a few days to eight or ten months old the child should be given a light treatment to the spine downward by gentle moving pressure along the spine, you should not articulate the spine of a child under one year old.

Manipulate lightly the mucous membrane of the mouth with the finger.

THE TONGUE - The tongue is more difficult

to examine than any other part of the body, because of the difficulty of determining what should be the normal condition of the tongue. The mucous membrane has heretofore been taken as a basis for diagnosis, largely because changes in the mucous membrane are an index of the conditions of the gastro intestinal tract. Some recent writers have set forth the claim that changes in the mucous membrane of the tongue do not depend primarily on the mucous membrane as a structure continuous with the mucous membrane of the alimentary tract, but that these conditions are due in the majority of cases to -

- a- Parasitic development;
- b- Toxic accumulations.

The reason for that is supposed to be that the tongue is an excretory organ as well as a secretory organ, in other words, the fact is well known to everybody that the dog perspires through the tongue and is not the exception but the rule, the process takes place through the tongue as an eliminating organ. The opinion largely arises in connection with a disease called leucoplakia, in which the tongue expresses a leukemic condition, the different coats of the tongue are masses of leucocytes piled up together, living and dead, the internal secretions are excretions make over secretions, the gland has power of reconstructing.

The condition of the mucous membrane therefore does depend to some extent on the conditions of the alimentary tract, but they also represent variations in the functional conditions of the tongue itself which indicate that abnormality is local as well as general. Tongue diseases have been thought of as superficial expressions of other diseases, which will disappear when the other conditions are cleared up, but this opinion has changed.

In the examination of the tongue, note particularly

1. Color. White or yellowish white
2. Eruptions, patches or nodules.
3. Inflammatory conditions of the tongue
4. Atrophy or hypertrophy.

1. Varying in the color- yellowish white patches are probably the most frequent varieties that are found on the tongue. These patches are soft and slightly elevated, were commonly found along the sides of the tongue. They are usually well defined and discrete, varying in size from the size of a pinhead to five cent pieces. In the larger patches there is diffusion or a tendency to diffusion before the confluent condition.

In most cases these patches are found at the same time on the eye, the eye lids and the palm of the hands

all these being an index of more or less severe bilious or jaundice conditions. Pigmentation of the tongue gives us dark purple, bluish or black colored spots, found following glossitis or in connection with Addison's disease or in connection with types of purpura or bright red spots in ecchymosis.

1. The black tongue is generally produced by the parasitic conditions, the tongue becoming first brownish, later black at the median line. At first it appears very much like an iron stain, in some cases the surface of the tongue becomes roughened, the portion affected becoming enlarged and all of the changes taking place around a central point. In most cases this condition spreads gradually over the entire tongue. In disappearing it goes away first from the outer margin of the tongue and later it extends to the central portion of the tongue.

2. Inflammatory conditions - Here we have glossitis as the main inflammatory condition in connection with the tongue. This affects the parenchymatous portion of the tongue, found particularly in adults of the male sex during the summer season; coming on suddenly, with such tenderness on and around the tongue, followed by difficulty on mastication. When the inflammation is established, the tongue becomes stiff and painful, the pain radiating into the muscles of the neck and around the shoulders into the axillary region. This represents a lymphatic radiation or propagation of the inflammatory processes in lymphatic field and it may travel in any direction and over any field that is represented by the lymphatic system.

The tongue begins to swell, this taking place rapidly, in twenty four hours it may become three or four times its normal size, so that it requires to be pushed out of the mouth in order to relieve the tension within the mouth. The tongue becomes indented by the teeth, is very red, coated with a thick fur, salivation becomes very much more exaggerated, dyspnoea and dysphagia and difficulty of speaking become well marked, the glands under the jaw become swollen, there is an elevation of temperature from 101 to 102 degrees and in some cases suffocation results, causing death. In other cases suppurative or gangrenous conditions may set in, and in some cases this may result in a pyaemic infection, the gangrenous exudation being thrown down into the pulmonary field.

If resolution takes place the inflammation begins to disappear, and in ten or three days minute ulcers are found located on the surface of the tongue, these continue for six or seven days, with febrile temperature, interference with speech, respiration and

deglutition gradually lessening until there is a complete recovery.

The inflammation may be caused by some direct injury to the tongue, the use of some corrosive substance, the presence or absorption of poison or toxin in the substance of the tongue, the absorption of nicotine into the tongue. The most difficult condition to differentiate from glossitis is an edematous condition to differentiate from glossitis is an edematous condition, in which the swelling of the tongue and its infiltration is due to salivary excessive secretion or infective conditions involving the floor of the mouth. In some cases there is considerable swelling, these cases are liable to be confused with glossitis, your principal differential point is salivary glandular enlargement.

Chronic Type of Glossitis -

Here there is an inflammation of the superficial surface, which becomes reddened, the papillary portions depressed. Around the margins of the tongue there are found well marked raw patches, but this only affects the external surface layer, and does not extend into the submucous structures. When associated with dyspnoea and dysphagia, it extends over quite a portion of the tongue area and in this case it is found chiefly in female sex.

ERUPTIVE CONDITION Eruptions are found on the tongue in measles, erysipelas, small pox, some types of herpes and in aphthous ulceration. The starting point of these eruptive conditions of the tongue is a minute vesicle formation and following this the vesicle changes, it changes according to the type of eruption on the external surface of the body. This is characteristic, e.g. the eruption of measles is not at first the same as on the tongue or on the body, at first it is vesicular, white later when it changes to the same type as the eruption on the surface, or primarily the tongue does not express the same condition as on the surface; it expresses a change in the blood. A vesicle physiologically represents an elimination of fluid and here is an attempt to elimination, or, as before stated, the tongue is here shown as an excretory organ. Then it later changes to the typical eruption the attempted elimination has failed and the tongue, as well as the skin, has become intoxicated by the disease. This shows that diagnosis from the tongue is not of importance, since it cannot be clearly diagnosed in the early stages. Later there are other points for definite diagnosis.

Another type of eruption is that found in mercurialization. Here we have what seems to be an indentation on the surface in the centre of the tongue, not the sides, it is a false indentation. It is also found in some cases of very severe acute glossitis, not yet explainable.

Side by side with these eruptions we find furrows with grooves on the tongue. These are found in health as well as disease, most typical along the median line of the tongue, in pyemic conditions of the body and localized ulcerative processes of the tongue or mouth. Sometimes we find longitudinal furrows on the tongue principally found in hypertrophoid conditions of the tongue, particularly in period of past middle life. Furrows on the tongue are also found in inflammatory processes particularly where the inflammatory process is becoming or has become chronic. These are sometimes called "Dissecting Furrows", because these deep furrows dip down into or dissect into the substance of the tongue. This is a very typical condition, e.g. in the glossitis following or accompanying syphilis. In this case the areas adjacent to the furrows become inflamed and hardened.

In the syphilitic tongue we have a tongue predisposed by:

- (1) The ulcerative processes;
- (2) The inflammatory processes.

Note the order of these processes as it is a diagnostic point in syphilis. If a gastro intestinal condition is the cause, the change in the tongue is reversed. This is so typical of syphilis that in some cases we find the ulcer on the tongue and an inflamed area all around the ulcer and produced after the ulcer developed. These conditions are found in secondary conditions of syphilis. Here we find the furrowing of the tongue with an irritation of the mucous membrane and the tendency to develop other conditions, like tuberculosis.

The syphilitic ulcer is of a stellate type, gradually deepening until the infective process takes in the parenchymatous substance of the tongue and at this stage the ulcer represents a malignant condition, being a case where you can trace out the condition same as in lupus. A vesicle is a benign eruption, the nearly eruption is malignant.

The syphilitic ulcer is not like the inflammatory ulcer. The differential point laid down in pathology is that, the inflammatory ulcer is on the syphilitic ulcer never angry. These syphilitic ulcers are exceedingly sensitive because they involve the parenchymatous substance of the tongue, and one other point that is typical of syphilitic conditions is the

tendency to spread to the gums, teeth, etc., the malignancy of the ulcer makes the infective process pass to the side of the cheek or gum. In the tertiary process of syphilis the ulceration process extends much deeper and as it dips down into the substance of the tongue it becomes convoluted because the connective substance of the muscles is of lower nutrition than the fibres. Both have a type of nutrition but you have the nipped form following long standing inflammatory processes, the ulcer forming in connection with a sloughing process.

The aphthous ulcer follows the typical course and is discussed in aphthous stomatitis. It is also always secondary to aphthous stomatitis. One typical symptom is its intense sensitiveness and painfulness, a very minute aphthous spot seeming to pain down into the structure.

Dyspeptic Ulcers - Are usually found on the tip of the tongue. Here the ulcer is exceedingly red and is usually in the form of very small circular ulcers recurring and associated with excessive salivation.

Traumatic Ulcers - Are found secondary to breaking of the teeth, the sharp edge of the tooth irritating the tongue, resulting in ulceration.

Tubercular Ulcers - On the tongue are usually found in the form of flabby ulcers, yellowish gray in color with an exudate of coagulated mucus the edges sharp and rough and very red, with a slight inflammation. The ulcer is painful and there is excessive salivation. The tubercular bacilli are found in the salivary secretions.

Miscellaneous patches on the tongue, found principally in the tongues of smokers, due to excess of nicotine or other poisoning materials absorbed into the tongue. Here we have a number of varying patches, the variation being both in size, quantity and quality, or, one patch not the same as the others, some are smooth, some red, blue and some white. The latter generally prevail, on account of the white corpuscles of the blood attempting to absorb the toxins and are thrown out on the surface.

Chronic atrophic Glossitis - The superficial part of the tongue becomes chronically inflamed, the entire dorsal portion becoming smooth and glistening, the mucous membrane reddened, surface very uneven, the papillae disappearing, the superficial structures tending to minute ulcerative patches, breaking the continuity of the inflammatory diseases. From this you will see why we classify chronic glossitis an eruptive process. It is a series of ulcerative spots over the surface of the tongue. The tongue gradually becomes enlarged and all-around its edges become tooth-marked, the tongue itself taking

on a glossy appearance and as the enlargement increases it becomes stiff and the feeling of tenderness and discomfort becomes marked, particularly in the movement of the tongue. The taking of food always irritates and if the food is absorbed into the mucous membrane of the tongue it produces pain.

Wandering Rash or Ringworm Tongue - Here we find circular exfoliation, especially in children, the patches being found on the dorsum of the tongue, the tongue becoming smooth and red. There is neither depression nor elevation of the papillae in this case the patches increase or the papillae become naked or shed off the surface membrane. This takes place particularly -

I. Through the food acting as an irritant, or
 b As a reaction from some gastro - intestinal condition.

The patches appear in the form of minute rings, the margin slightly yellow in color and elevated above the surface level and are distinctly marked off from the surrounding portions of the tongue. The circles gradually widen and along with this widening there is a contraction of the patch from the margin toward the center, or you have a little patch which contracts around the central point and is marked off from all contiguous areas, or is a typical ringworm on the tongue.

Atrophy and Hypertrophy of the tongue -

Atrophy takes place in connection with or as a result of some central or peripheral condition, e.g. softening, hemorrhage, tumors, located in connection with the nucleus of the twelfth cranial nerve. In other cases in which the nucleus is affected, paralysis of the tongue, either partial or complete, may be found. This condition is found in connection with lesions affecting the medulla or point of decussation around the point of the medulla. We find the atrophic condition of the tongue in connection with bulbar paralysis, progressive muscular atrophy, glossolalia laryngeal paralysis, hemiplegia, etc.

Hypertrophy of the Tongue - In nearly all the cases in which hypertrophy is found it represents a congenital condition, associated in some way with hydrocephalic conditions, with the hypersecretion of the cerebro-spinal fluid and is a typical atrophic disease. In some cases it is found late in life, when the tongue enlarges in connection with pressure symptoms due to some enlargement at the root of the tongue or some of the structures

in the neck, e.g. we find the hypertrophy of the tongue in cretinism, idiocy, hydrocephalus. In some cases the hypertrophy of the tongue is the result of lymphatic obstruction. In this case there is a lymph stasis which produces abnormal pressure at the root of the tongue interfering with normal mobility and circulation, particularly the venous or return circulation from the tongue. In using the tongue as a basis for diagnosis we must take account of all these conditions that have been mentioned in addition to -

I. The degree of moisture or dryness found in connection with the tongue. In estimating the value of this condition we must determine whether it is a local condition as, e.g. in all cases when the tongue is dry, e.g. in keeping the mouth open and breathing through the mouth, or whether due to an expression of some condition in another part of the body, e.g. when moisture and dryness is associated with one side of the tongue or one portion of it, we can generally conclude that it is due to some paralytic condition or some direct and immediate obstruction to the blood or local nerve supply.

The moist tongue appears in different forms, the Dotted or Spotted Moist Tongue. Here we have minute white spots on the tongue and the whole surface very moist. This is produced by an excess of whitened epithelium in connection with the papillae found, e.g. in low nutritive conditions of the body, particularly in the course of the chronic diseases.

DRY DOTTED or SPOTTED TONGUE. Here we have find the excessive white spots as a typical expression of the dryness of the secretions, as in febrile conditions, in acute diseases. The white spots are an indication of some constitutional disturbance. The white dotted moist tongue is found, in the chronic non-febrile, whereas the white dotted dry tongue is a symptom of acute febrile conditions.

Dotted or coated tongue - Here there is always a febrile temperature and this condition represents the acute constitutional diseases just as the furring of the tongue represents an acute gastro-intestinal condition. One of the most typical symptoms we have of the typho-salaris or typho-pneumatic conditions is the dotted or coated tongue.

Coated Tongue without the dotting or spotting Here the excess of white epithelium on the papillae is filled up with exfoliated substance

and other accumulations eliminated from the secretions. This is not as is often supposed an index of remnants of food left in the mouth and accumulated on the tongue. This is found in acute febrile conditions and may be either moist or dry, e.g. in pneumonia and typhoid fever associated with this condition. With this type of tongue we always find pyrexia (febrile temperature); extreme prostration of the patient; deficiency of salivary secretion. You may get a moisture while there is a deficiency of salivary secretion through the lymph in excess.

Strawberry Tongue. The tongue is coated and also injected; the papillae also injected and glistening through the coating of the tongue, particularly at the tip and sides and giving the appearance of strawberry patches, e.g. in scarlet fever the tongue assumes this appearance about the second or third day, always with a high febrile temperature. If you have a simple case of scarlet fever and high fever temperature you will not get the strawberry tongue. It is a pyrexia condition not just explainable, unless it is an attempt at elimination.

Plastic Tongue. Here there is thick uniform coating over the tongue, particularly around the edges, the papillae being elongated the intervening spaces between the papillae being filled up with accumulated matter including various types of germs, mucus, etc. This type of the tongue condition is found in the acute febrile diseases, especially when there is great prostration and exhaustion. The salivary secretion is also deficient, allowing the accumulation of matter to thicken and coalesce into a more or less consistent form or substance.

Furred and Shaggy Tongue. Here we have principally the moist type, the papillae being much enlarged and the epithelium becoming more or less horny. These are exuberant nervous conditions.

The dry tongue is also found particularly in real or premature old age, in connection with different types of disease, more aggravated when constipation is present. This type of dry furred tongue generally first follows some type of the dotted tongue, the disease gradually advancing as the furring of the tongue becomes more aggravated. There are two conditions found here: (1) Deficient salivary secretion and (2) Febrile temperature. The furring becomes greater as the febrile temperature increases.

Crusted Tongue. Here the tongue is dry and brown over the surface, a thick coat being spread continuously over the tongue. The substance of

the coating dips down into the epithelium and consists chiefly of parasitic and debris matter. This condition is found in the course of febrile diseases as a result of some preceding condition, e.g. the coating frequently indicates the typhoid state, the character of the coating depending to some extent on the intensity of the febrile condition. In some cases it is found associated with low temperatures, e.g. in cancerous and syphilitic patients; in cases of albuminuria and in some of the forms of chronic nervous diseases.

Red Dry Tongue - This condition is found in chronic wasting diseases, e.g. in the later stages of pulmonary tuberculosis, it is also found in dysenteric condition, chronic diarrhoea, being due to the liver in the latter case. Here the tongue is red, dry and atrophied, gradually becoming smooth as the papillae disappear. Here the epithelium is shed off in patches, patch after patch being thrown off until the tongue is dried up.

Red Raw Tongue - In this case the covering epithelium is pulled off with the wasting away of the salivary glands and the drying up of the tongue. This condition is found principally in conditions involving the brain.

Cyanosed Tongue. Here the tongue is bluish in color, sometimes assumes a purplish color, the surface is both and generally moist. This is found in albuminuria, or in some local condition of the tongue in which the epithelium is thickened, the pressure of the larger amount of the epithelium causing cyanosis of the circulation through the tongue.

Moisture in Connection with the Tongue - Is found most commonly secondary to or produced by some slight irritation involving the papillae, the salivary glands or both of these. The next moist condition is found,-

(a) Simple or non-complex. In this case it is found due to some local irritation, e.g. an irritation of the salivary secretion and alteration in the character of the secretion.

b) It may be necessary to some other disease, the most typical being pneumonia and pleurisy.

The Dryness of the Tongue. This rarely if ever is a primary local condition: it is found secondary to

(a) Moisture of the tongue, &c. it is a reaction from the moist condition;

(b) It may be produced by over stimulation up to the point of exhaustion. Here the salivary

secretion inefficient on account of the temporary febrile condition.

(c) The dryness may be due to a modification in respiration. In this case the mucous membrane of the mouth and tongue becomes dried up on account of the dryness of the respired air or breathing through the mouth. The external condition of dryness drying the mucous membrane;

d It may be associated indirectly with some of the chronic diseases, especially the chronic febrile conditions. In this case the mouth is really parched on account of the fluid taken away or kept away by the other tissues, e.g. in pneumonia. As a general rule in pneumonia when the temperature is high the tongue is moist. In typhoid fever when the ~~axilla~~ temperature rises above 100, the tongue is usually dry. Some explain this difference between the pneumonia and typhoid tongues on the basis between a respiratory disease (pneumonia) and a circulatory disease (typhoid). This, however is not true. The real explanation to be found is the fact that in pneumonia all the rest of the body contributes all of the available fluid to the respiratory apparatus in order to keep it moist, while in typhoid fever the entire mucous membrane of the alimentary tract is dried by the inflammatory process. This means that here we have in the typhoid fever condition a continuity and it may extend to all of the mucous membranes, even the brain, whereas, in the pneumonia condition there is not the continuity, but it is limited to the respiratory field. In this line with this it has been pointed out that a general dehydration of the body may cause dryness of the tongue, even without a local diminution of the secretion. Another good strong point is a general versus a local disturbance, e.g. in chronic diarrhea the tongue remains dry all the way through the disease, whereas in the cholera the tongue remains moist, even up to the point of death, even when the temperature becomes exceedingly high. In cases of recovery from cholera the tongue becomes dry as soon as the patient begins to recuperate and that is one of the prognostic symptoms in the turning point of a cholera patient. Diarrhea is more a local condition, whereas cholera a general condition. W

Why do we get the tendency to dryness when conditions in cholera are better? Because it is no longer a general condition but local, or the cholera is changed to diarrhea.

In ~~axi~~ diabetes there is generally extreme dryness of the tongue, which is explained by the reaction of sugar in the blood upon the mucous membrane producing dryness in every mucous surface. In

some cases of diabetes the reverse of this is true, The explanation here is the same as before, i.e. in general constitutional diabetes you have the dry tongue, in the localized diabetes, the moist tongue. What is the localized diabetes?

Diabetes is deficient metabolism, e.g. pancreatic disturbance, a localized diabetes would be a localized pancreatic disturbance, having its site or field only in one of the metabolic organs, pancreas, kidney, liver, brain are all disturbed. In the local type we have the field of the medulla involved in regard to one organ, the pancreas.

The condition of the tongue, whether dry or moist, is a most important diagnostic point in diabetes.

Hydrophobia, Here there is great moisture of the tongue, generally due to the excess of the secretions. In some cases, however, the tongue is dry and here the moist tongue indicates the local, the dry tongue the general, and that may be said to be the dividing line between incurable and curable cases of hydrophobia.

Acute Obstructions. Here there is a dry tongue due to the deficiency of the salivary secretions. There are several conditions associated with these acute obstructions;

- (1) A general dehydration;
- (2) Body aesthesia; weakness or exhaustion.
- (3) Pyrexia.
- (4) A local condition of the mouth

The conditions modify the state of the tongue, therefore, one of the first signs of improvement in a patient who is subject to any of the acute diseases is a return of moisture to the tongue.

Dryness of the Mouth, Furring and Incrustation.

Are always associated with lack of salivation, consequently we can infer from the condition of the mouth and tongue the nature of the affection involving the intestinal tract, except, probably in diabetes. In this case the diminished salivary secretion is accompanied by diminished gastric intestinal secretion and of course, with dyspeptic symptoms. In the type of diabetes with the moist tongue there is an excess of gastro intestinal secretion and the ability to take large portions of food, while at the same time the patient will loose food, flesh, the food being eliminated and not assimilated.

In diabetes the indication to use food is in a form of easily digested, such as liquid or predigested food. The same thing is true to all diseases that involve a low vital state. The reason for this is that the salivary secretions are unable to

prepare the food for the true digestive processes.

The continual dryness of the tongue is, in general, a bad symptom, except in the case of diabetes. The dryness in these cases may indicate (a) lack of salivary secretion; (b) failure to carry on the nutritive processes. In these cases the indications are for tonic treatment with liquid diet as refreshing as possible.

TREATMENT OF THESE TONGUE CONDITIONS -

In treatment of all conditions of the tongue particular attention must be given to the circulatory field, also -

(1) When the movement of the tongue is interfered with to any extent, or up to the point of paralysis, general treatment of the cervical region and of the throat is called for with good articulation of the head in relation to the atlas;

(2) In the tremulous conditions of the tongue, where there are present fibrillary contractions, such as are found in general paralysis, in the glossolabial paralysis, the same kind of treatment must be given, particular attention being devoted, however, to the direct movement of the tongue on semiprincipal, for instance, as in the treatment of a paralyzed arm.

(3) In all cases where there are inflammatory processes, or interferences of any kind with the fluid circulations, pay particular attention to the stimulation of the general circulation of the body, with specific treatment to localize the food in the tongue and neck regions.

Glossitis -

Here we are dealing with acute parenchymatous inflammation, with a continual tendency to suppuration and congestion. The predisposing causes are;

(1) An impairment of the general health of the patient, therefore, constitutional treatment is called for;

(2) The exciting causes are traumas directly involving the tongue, in the form of insect bites. Exposure to moisture or excessive heat. Here there is liable to be a toxic condition, which must be dealt with from the toxic standpoint.

(3) The most marked symptom is swelling of the tongue, with tenderness or pain or both. To keep this under control begin in the vasomotor area in the upper cervical region, to give thorough drainage to the vasomotor system, continuing the treatment of the vasomotor region in the upper dorsal area;

(4) Dysphagia and Dysphasia and catarrhal stomatitis, so to be kept under control by keeping the muscles free along the sides of the neck and in the inferior maxillary region; raising of the clavicles and applying stretching to the upper part of the spine;

(5) The sublingual and cervical glands become swollen and there is a local inflammation with a tendency to a general febrile temperature and sometimes tending to infiltration and abscess in connection with the glands themselves. To meet this, manipulate the tongue itself, pulling it out and giving thorough extension so as to effect the structures at the root of the tongue. Accompany this by treatment of the neck;

(6) In the inflammatory chronic condition, when the mucosa of the tongue is involved, remove all irritants. In addition with this deal with the congestive or inflammatory conditions as you would with other congestion, e.g. the application of ice at the angles of the jaw, in the mouth and on the tongue. In very severe cases water as hot as possible held in the mouth for some time, in most cases followed by articulatory treatment down along the neck, will relieve the condition;

(7) Where there is pus formation, put the patient on a dry food diet and stimulate strongly the circulation to and through the localized points;

(8) In general uncooperative tendencies pay attention to the articulation of the jaws and traction movement of the tongue on its root and if necessary in severe cases treatment from the septic standpoint. Whatever may be the producing cause of sepsis use a suitable

antiseptic;

(9) In all forms of glossitis give thorough treatment in the lower sphincter area;

(10) In hypertrophy of the tongue, where there is a tendency to suffocation, keep the tongue well pulled out of the patient's mouth and give the treatment for congestive infiltration. In very severe cases it is sometimes necessary to resort to surgery, e.g. tracheotomy.

(11) In the desiccated type, where there is a gradual development on the surface of the tongue of deep fissures and indentations, keep the tongue thoroughly cleansed with the use of some antiseptic solution, as there is always a liability in such a condition to accumulation of debris and parasites, which is liable to create ulcers;

(12) In Psoriasis of the tongue, where we find areas of hyperplasia involving the epithelium of the tongue, also use antiseptic precautions to keep the tongue moistened, i.e., if in hot weather. The psoriasis of the tongue is sometimes called the "map tongue" or "Lingua Geographia".

Angina Ludovici. A rare, acute phlegmonous inflammation of the tongue, always found secondary to some acute infectious disease, measles, scarlet fever, diphtheria. The predisposing cause is a weakened condition of the mucous membrane, in other words, the neurotic condition of the nerve center of the mucous membrane. The exciting cause is the streptococci or staphylococci infection. It is not the primary or secondary involvement of the mucous membrane, but it is an involvement of the mucous membrane through infection of the glandular system, e.g. the submaxillary or sublingual glands become affected and it is then transmitted to the mucous membrane of the tongue. The symptomatic conditions are;

(1) Intense pain and tenderness, associated with swelling of the subaxillary plane and contiguous structures;

(2) Where there is an involvement of the cellular tissue on the floor of the mouth extending downward along the anterior portion of the neck, at this stage the pain becomes very intense, swelling very marked, causing articulation, deglutition and mastication to become exceedingly difficult or impossible.

(3) In this stage there is the development of febrile temperature and this stage is marked by two possible lines of development, either along the line of septicaemia or the typhoid state. In most cases it terminates in a very severe and large ulceration, if it continues to be localized, though it may spread over the whole system.

Leukoplakia, Oris or Linguae.

This is a condition which attacks the mucous membrane either of the mouth or of the tongue. Exciting cause is toxicity. The favorite point of attack is the lateral margin of the tongue, but it has a tendency to spread over adjoining membranes. It is developed through gland field. This is one of the most stubborn and difficult conditions to deal without outside of cancer, there are many who claim that it is a condition of cancer, but it is not so, a cancer involves the red blood corpuscles, while leukoplakia involves the white cells. This is sometimes a starting point for the development of cancer. The description of it is the presence of white or bluish white star like patches on the tongue. These tend to assume the form of a cone, elevated above the mucous membrane level of the tongue.

The ground work for the patch development is a deeply ulcerative fissured condition of the surface of the tongue, these representing cracks that are quite deep. At the bottom of this there is a broken down granulation tissue, debris, germs, etc. The starting point of these conditions is the cause of such conditions as the Geographical Tongue, e.g. stomach, cardiac hypertrophy, acidity, fermentation, dilatation of the stomach will dispose. Between the fissures there lie little island patches. Latter have lost their epithelial layer, and are covered with a filmly bluish substance. Structure of the patch is firm and elastic. A tendency to point. Portions of the tongue not covered with these patches we find a dark, thick coating and disagreeable odor associated with the condition. Under surface of the tongue becomes smooth and shiny red, except where there are vesicles on the shiny surface of the tongue.

Among the symptoms are acute soreness, sensitiveness to touch and the presence of food in the mouth and great tenderness of movement of the tongue. Sores on lips and tongue. There is no swelling or tenderness associated with the lymphatic system. In some cases the exciting cause is said to be

- (1) Gonorrhoea or syphilis
- (2) Chewing
- (3) Smoking

Another point in reference to the disease is that it is associated with hereditary rheumatism. In winter and spring the leukoplakia on the tongue represents scaly patches with dark areas of infiltration, involving the layers of the skin, accompanied by the psoriasis on the surface of the body. This is a type to which another name is given Ecthyma of the

tongue, is scaly in appearance like fish.

Treatment of this condition. Treat as a case of constitutional toxemia and from the standpoint of its cause, carefully getting the history of the case. In all cases remember the fundamental point is an ulcerative tendency and this must be controlled from the lymphatic standpoint, strongly stimulating the lymphatic circulation, which will produce elimination causing the patient to sweat. Have patient use plenty of water.

In the localized multiple tongue use glycothymoline and bichloride of mercury. The osteopathic treatment is largely to treat for chronic glossitis, particular attention being given to whatever organ is involved. Look for kidney and bladder and liver conditions in rheumatism, eliminate all stimulants, use mineral waters, use some strong cauterant chromic acid.

The Fauces represents the passage way between the mouth and the respiratory tract. It is lined with mucous membrane, hence we may find here all the diseases liable to be found in any mucous membrane, principally inflammatory diseases. The symptoms and conditions are very much the same as in any disease associated with the mucous membrane field. Here we have a paralytical and rheumatological conditions.

The large muscles associated with the pharynx that assist in the process of deglutition are very liable in disease, e.g. atrophy, pyrtrophy, caused by infiltration of the muscle substance, functional conditions like paresis, paralysis. One very common condition found in this field is a rheumatic inflammation associated with the gradual loss of muscular power and ultimate paralysis, the loss of the muscle power being caused by the toxic condition in the muscles and the gradual process being caused by the over-stimulation from the presence of this toxic matter, following this the atrophy and wasting of the muscle substance.

Paralysis of the pharyngeal muscles does not present the same symptoms as paralysis of muscles in other fields of the body. This is due to the fact that the pharyngeal nerve supply is associated primarily or secondarily by anastomosis with the glossopharyngeal nerve in relation to the tongue which supplies other parts, e.g. larynx, which is more liable to show the paralysis earlier than the pharynx, hence the primary symptoms or pharyngeal paralysis are nearly all laryngeal. This is one of the points in connection with the distribution and anastomosis of the tenth cranial that may be straightened out some day when we understand fully

the anatomy of the tenth cranial nerve. This nerve is a pure primary nerve in its functions: the laryngeal and pharyngeal fibres are not primarily sensory nerves, but nerves which have a secondary sensory function through anastomosis with the fifth, seventh and ninth cranial nerves.

On account of the relation of the pharynx to the nose, mouth, and lungs, the regions of the respiratory tract, the larynx and pharynx are both liable to infection with diseases involving the other organs mentioned. This infection comes chiefly from the nasal-naso-pharyngeal, or buccal regions. There are very few cases in which the infection is primary in the pharynx.

The pharynx may also be the seat of morbid symptoms, resulting secondarily to disease of other parts of the body, e.g. inflammation of the mucous membrane in rheumatic or gouty patients, sub-acute and chronic inflammatory conditions of the pharynx secondary to dyspeptic conditions, tonsillar conditions and localized rheumatic conditions.

Aside from these conditions the diseases of the pharynx are all related to complications of or of secondary to diseases from somewhere else in the body, in other words here we have a similar condition to that found on the tongue, the tongue becoming an excretory as well as secretory organ in some diseases and here the pharynx becomes an abnormal excretory organ. The same thing is found in connection with the synovial membrane, which becomes an excretory organ under abnormal conditions, to drive the toxin or waste out of the blood.

In Physiology we find the function of the body classified in many ways, e.g. circulation, respiration, digestion, excretion, metabolism, but in the ultimate physiological processes we find that there are two physiological functional processes, viz. Nutrition and Reproduction or regeneration, i. e. nutrition as a vital process is the balance between the secretion and excretion. What is that balance? It is the keeping up of the secretory processes, called internal and external secretion. If the excretion is abnormal the secretion is abnormal and vice-versa the balance having been disturbed and this represents the state of malnutrition. Here we have disease as an effect or result, representing the loss of balance or a disturbed nutrition.

In these conditions the tonsils, pharynx, uvula and synovial membrane take on the excretory function to help maintain the balance. From the osteopathic standpoint we are to restore this balance between secretion and excretion and this is why we get such good results by working through

the nervous system supplying these structures.

Pharyngeal tubular ulceration is secondary to a similar condition in some other portions of the system. The general infection of the Pharynx may take place with any of the infectious diseases, such as measles, scarlet fever, diphtheria, etc. or it may be secondary to a continued nasal catarrhal condition.

In the latter case the eruptive condition comes on secondary to the catarrh and will appear on the surface of the mucous membrane or secondary to a more general intoxication. The pharynx as a field becomes intoxicated and this cannot be eliminated and the more specific intoxication develops. Infectious diseases are capable of abortion at the general intoxication stage, but not in the specific intoxication stage, for once established, there is a chain of continuity of stages through which the disease must pass.

The symptoms that are associated with the pharynx are very difficult to differentiate from those of the larynx, or naso-pharynx, because as we mentioned, the pharyngeal disturbance expresses itself really in some other field. For this reason general symptoms are not well marked, except where there is a specific condition, like diphtheria, erysipelas, retro-pharyngeal abscess, tonsillar affections. In these cases the symptoms found cannot be explained by purely local conditions e.g. high febrile temperature, intense headache, diarrhoea, rapid pulse. These symptoms all point to a process taking place and tending to affect the constitution.

The pharynx or naso-pharynx is also subject to obstructive conditions, in connection with the passage of the air or of the food, hence we find dyspnoea or dysphagia commonly as symptoms. These are found principally in children, in whom the pharynx or naso-pharynx is only partly developed.

The objective examination of the patient should always be made by the use of some form of pharyngoscope. Have the patient reclinate with the head and back slightly inclined backward, then open the mouth as wide as possible, using a tongue depressor to keep the tongue still and down, make the patient breathe gently taking a full breath with the mouth, as inspiration becomes deeper, cause tongue to become relaxed by pressure towards the floor of the cavity of the mouth. This will cause the uvula to be elevated. While the patient is taking a full breath examine the pharynx and if necessary apply ~~maxillary~~ traction to the tongue, the pulling out of the tip of the tongue increasing the pharyngeal exposure.

In making the examination of the fauces and pharynx:

(1) Note the color and appearance of the mucous membrane, particularly if there are any variations in color:

(2) Note position and appearance of uvula,

whether it is uniform and free in its movements or drag line in one point or another;

(3) Note size and uniformity or non uniformity of the tonsils, note also the elevation in connection with the mucous membrane at particular points;

(4) Note the nature of the excretion.

The color of the mucous membrane in diseased conditions is usually a darkened red. In acute inflammatory processes it is a bright red; in the heart diseases with a cyanosis there is a venous congestion, with a darkened discoloration; in obstruction of the superior vena cava, e.g., by pressure of a tumor, there will be a cyanotic condition of the pharyngeal mucous lining; in aortic regurgitation or insufficiency there will be a pulsation of the capillary blood vessels, in some cases minute hemorrhagic points over the surface of the pharynx from the blood is oozing. This is chronic to the acute or chronic dyspnoeic condition of the pharynx.

In cases where the blood is expectorated a final diagnosis should never be made without a careful examination of the pharynx, because in many of these cases a varicose condition of the blood vessels would explain hemorrhage. In many of these cases careful examination will show elevated points along the walls of the pharynx or nasal pharynx. These elevations are caused by small glands in the pharyngeal walls. In this case the blood is found superficial running through the mucous membrane.

Fragile conditions are also found in the pharyngeal walls, as in measles, scarlet fever, mall pox.

The tonsils lie at the sides of the posterior part of the mouth in connection with the anterior and posterior folds of the pharynx. Normal they consist of glandular structures, made up of follicles, bound together with connective tissue, the crypts opening into the surface. If there is enlargement of the tonsils the posterior surface cannot be seen. The tonsils are eliminative and detoxinating organs and are subject to inflammatory processes, acute and chronic infection. Enlargement of the tonsils generally goes on quickly to the point of exudation, because of the eliminative or excretory nature of the function described by these glands when they are normal. In this case we find white spots, a dotted points, over the membrane. Sometimes there is the formation of a false membrane.

There is a great liability in the tonsils to become chronic in connection with the inflammatory process, because the connective tissue extends as the glandular structures become infiltrated. The

tensilar condition of chronic enlargement is very similar in its nature to the chronic enlargement of the thyroid bodies in goitre, in other words, this carries out to the point mentioned before, *v. l.*, the exaggeration of the excretory function.

The point not mentioned in connection with excretion is the predominance of vaso dilation, *v. g.* the kidneys. The only thing that checks dilation in the kidneys is the fact that the pressure of blood in the heart is the same as that in the kidney from assuming a similar condition to that of the thyroid bodies. If the heart is normal the pressure of blood is enough to send the blood to and through the kidneys. We find no vaso dilators in the kidneys, but they have vaso constrictors.

The Uvula. Here we have a small organ in close proximity to the palate, varying very much in size and shape, particularly on account of catarrhal conditions and in connection with the catarrhal diathesis found at the present time. We also find a justification of the uvula in cases where the patient is coughing a great deal. In this case the uvula becomes elongated and in many cases assumes a pointed shape extending as far back as the base or root of the tongue. The principal condition of the uvula is that of enlargement which may be due to an adenoid condition. Bright's Disease. It is also found in old cases where the nutritive or vital condition of the patient is low; also in most cases of heart disease.

The function of the uvula is to assist in deglutition, helping to force the bolus, also helps in articulation, closing of the pharynx, helps to tense the palate and empties the chain of functions extending from the hard palate and is a great lymphatic structure, secreting lymphatic fluid.

In all cases of pharyngitis the uvula is the seat of the most severe inflammatory process and this goes on until the uvula becomes adenoid, sometimes to the point of ulceration and suppuration, and this carries out exactly its function, lymphatic.

Hemorrhage. Also common in connection with what are called infarct and results frequently in a sloughing of the uvula. Ulceration usually takes place, especially when a number of small superficial ulcers are found located in the posterior wall of the pharynx. Ulceration secondary to typhoid fever, here the ulcerative process is associated with the continuity of the mucous membrane in the alimentary tract; also in syphilis during the secondary stage, when we find small hollow ulcers on the uvula, generally accompanying, or secondary to the presence of small patches on the mucous lining of the pharynx and the mouth. In the

tertiary stage these ulcers become deep, sometimes a sloughing away of the tissue taking place until the tissue is entirely destroyed. In other cases granulation and the formation of scars take place. In the latter case there is found as symptoms difficulty in the mobility of the pharynx; imperfect action of the uvula; difficulty in breathing; difficult deglutition, and, in addition, the other syphilitic conditions or symptoms found in primary condition.

Tubercular ulceration may also be found involving the pharynx and uvula. These are found involving the pharynx and uvula. There are found as very irregular shaped ulcers and there is a diffusive pain, somewhat like the pain that is associated with syphilitic conditions. In the latter stages of tubercular ulceration the tubercles ulcerate in connection with the larynx and these are more easily detached than the tubercular ulcers in the pharynx.

Exudation may be found on the tonsils secondary to the inflammatory condition, e.g. as a sequel to scarlet fever, and what is called "Pseudo diphtheria." This is a false membrane formation, differing from the true membrane in that it is superficial.

Among the changes we find in the pharynx, are changes in sensation, representing a functional disturbance, they are found in the form of anaesthesia or hyperaesthesia and can be detected only by the use of a pharyngeal probe in connection with the pharyngoscope; loss of sensation on the entire posterior wall of the pharynx, is found in many cases of hysteria, in bulbar paralysis and diphtheritic paralysis. In the latter case the intoxication produces complete anaesthesia of the mucous membrane, it is a purely local sensory condition. In bulbar paralysis the sensory impulses are cut off in connection with disease, either acute or obstruction in the field of nuclei. It is behind the local conditions in the vital centers. In hysteria it represents a condition of local function and inhibition, the cause of the inhibition being more or less general.

Hyperaesthesia, is found in connection with the presence of foreign bodies in the throat, inflammatory exudates and especially in connection with the presence of toxic substances, exciting the mucous membrane. The toxic substances are taken from without or eliminated from the system.

In the pharyngeal diseases, whether the acute pharyngitis or the more chronic pharyngitis, there is also always an enlargement of the cervical glands in the neck and enlargement along the angles of

the jaws, the superficial glands of the mouth and throat and the superficial glands that accompany the blood vessels. This seems to indicate that all pharyngeal diseases are either intoxication or the result of intoxication. The symptoms are;

(1) Pain which is intense and aggravated in all diseases of the larynx and pharynx, because the functions of these structures require mobility. When contracted and infixed or cicatrization process exists the slightest movement will cause intense pain. This is particularly true in membranous pharyngitis where the exudation in the mucous membrane causes enlargement and rigidity the mucous membrane causes enlargement and rigidity of the membranous structures, the movement of which gives great pain. Pain is also very intense in rheumatic tubercular and cancerous condition, the pain here being aching or cutting pain.

(2) Dryness or Tickling Sensation. The sensation is always found in the pharynx and is more or less connected with either anaesthesia or hyperaesthesia.

(3) In some conditions there is a peculiar odor associated with the breath, e.g. in tonsillitis, due to retention of secretions, in the syphilitic and cancerous conditions, due to changes in the tissues of a degenerative or abnormal growth type. In all of these cases the odor is one of dying tissue substance, modified in some cases of intoxication.

(4) Spasms. These are always found in pharyngitis, especially in neurotic subjects. One type is laryngismus stridulus, then symptoms of laryngeal obstruction, suffocation, aggravated spasms, sometimes similar to hydrophobic attacks.

(5) The constitutional symptoms are of different varieties.

(a) Nervous, and this of course will follow along the line of the predisposition of the patient, every patient has nervous weakness;

(b) Constitutional debilitation, e.g. suppressed menstruation;

(c) Kidney complications, classified under the head of irritability of the bladder or kidney, or of both.

Treatment of Pharyngeal Conditions.

All pharyngeal disturbances have one particular characteristic, viz. that they represent both sensory and motor conditions and this is to be traced back to the general pharyngeal nerve and its relation to the tongue as well as its relation to the throat proper. This General Pharyngeal nerve is a mixed nerve, probably originally a sensory nerve, having motor connections established through the eleventh cranial nerve.

Another reason why the glossopharyngeal nerve represents a wide spread pharyngeal involvement of the sensory and motor system is that, it establishes connection with the first, second, seventh and eighth, tenth, eleventh and twelfth cranial nerves, and also with the sympathetic system. The glossopharyngeal nerve is best reached;

(a) By the internal manipulation at the base of the tongue

(b) By direct manipulation around the tonsils; either internal or external

(c) In connection with the meningeal or neural fibres, as they pass out through the jugular foramen;

(d) In connection with the deep muscles of the anterior and lateral portions of the neck. These are the points that represent the general treatment of pharyngitis.

Special Treatment

(1) Pay particular attention to the muscles and glands in the cervical region, getting relaxation and thorough mobility of these muscles.

(2) Pay particular attention to the blood circulation in connection with the carotid and jugular. In order to stimulate the circulation direct, through the carotid, give vaso motor action, or effect to the associated structures. Increased blood pressure in arteries produces also effect.

(3) Internal manipulation of the mucous membrane of the mouth and basal portion of the tongue, manipulating backward and forward.

(4) Give direct treatment to the pharynx in the form of extension, applying this by pushing the head of the patient slightly backward so as to fix the fingers around the pharynx, then push the head and neck forward while pushing and pulling the pharynx up toward the root of the tongue. This should be followed in all cases by vibration of the pharynx.

(5) The lesions found are generally those of the atlas and axis, or in the upper cervical region. These lesions should be particularly attended to in chronic cases, being vaso motor.

Membranous Pharyngitis. Here is an acute or subacute inflammation of the pharyngeal mucous membrane, accompanied by the formation of a false membrane, the exciting cause being diphtheritic or erysipelas, associated with streptococci, or, in other words, this is a case of infection, either from diphtheritic conditions in particular or diphtheritic conditions secondarily.

Dysphagia Tenuis. Exposure of a person in a low state of vitality to cold, impure air or septic conditions, especially exposure to the degenerated

substance of scarlet fever.

Symptoms, are a severe sore throat, inflammatory or exudative, with a membranous formation consisting of a thin whitish white surface, rounded or patches, extending down into the connective tissue, of the epiglottic vein has been deposited on a small localized point and that point becomes then a degenerated surface membrane. The membrane and patches are entirely movable, or they do not imbedded in the tissue as in a typical diphtheritic condition. The starting point is usually found in the small vesicles which tend to develop into minute ulcers and these heal. There are no constitutional symptoms which differentiate this condition from symptoms which diphtheritic pharyngitis. It is a purely localized condition not affecting the system.

Treatment. Treat the same as in the acute type, in addition.

(1) Use some local antiseptic so as to keep the pharynx in a thoroughly antiseptic condition, a weak rate solution of hydrogen peroxide or aliphazone solution full strength.

(2) Give the patient tonic treatment for the localized condition of the throat.

(3) Apply daily the cold sponge bath to the neck in order to harden the skin and subcutaneous tissues and along with this use the hot foot bath. In all conditions of pharyngitis a hot foot bath and a cold tonic douche at the nose will be beneficial. Let the diet be simple so that the stomach will not be irritated.

Chronic Pharyngitis.

Here we have the chronic inflammation of the pharyngeal mucous membrane associated with one of two conditions, either atrophy or hypertrophy of the follicles. The basic foundation or predisposition is atarrh. Here we have a destructive morbid anatomy in which the mucous membrane is red, enlarged and inflamed, in the hypertrophic type. Anemic thin and dry in the atrophic type. In both cases there is an enlarged and varicose condition of the veins, having a static condition of the venous circulation and from the atarrhial side in which condition there is a venous static condition.

In the follicular type the pharyngeal glands as well as the mucous membrane are enlarged and become very red, appearing as shining nodules, bright red to color, on the mucous membrane. Enlargement of follicles is secondary to hyperplasia of the lymphoid tissue with the accumulation of the leucocytes and irritant excretions, the glands are so much enlarged that they have lost their function and the material that should be circulated to and

form the glands dies as is deposited in the gland structure. These cases are associated with low vitality, also found principally in middle life. Exciting causes are overuse, strain of pharynx, in connection with strain of voice, exposure to cold and moisture. Sometimes exciting cause is neoplastic growth.

Symptoms. Local discomfort in the throat, dryness, sensation, uneasiness and tickling, tendency to cough, burning and the constant effort to clear the throat. Worse in the morning and in connection with abnormal, atmospheric conditions, excessive use, etc. When the condition extends to the larynx instead of a short cough there is a hoarse dry hacking cough. In the simple chronic type there is an accumulation of mucoid and purulent matter on the mucous membrane and in the posterior nares, which tends to impair the senses of hearing and taste. As the condition becomes established the uvula is elongated until the tip rests on the base of the tongue. In this case there is a nasal-vocal intonation. The posterior nares tend to become filled up with mucoid substance. The result is headache and vertigo.

Treatment. This is similar to membranous type of pharyngitis. Attend to the systemic disturbances by tonic treatment. Eliminate all irritants, like tobacco, alcohol, etc. If there is irritation in the posterior nasal and pharyngeal fields the insufflation of powdered salt or powdered alum or the two in combination will allay the irritation. Attend to the lesions that are found in the upper cervical and upper dorsal regions.

Retro-Pharyngeal Abscess.

Here we have a suppurative and inflammatory conditions of the glands and also of the connective tissue along the anterior portion of the cervical region. It is found principally in children who have the suppurative diathesis, e.g. from one to three years of age: Secondary to any type of infection or caries of the teeth or of the spinal vertebrae, etc.

Morbid anatomy is that of congestion, inflammation, localized leukemia, abscess of the cervical and pharyngeal glands and field.

Among the symptoms the most marked are;

(1) Pain, very intense, associated with congestive and inflammatory processes, swelling.

(2) Obstructed respiration, dyspnoea, cough, gradually becoming more aggravated until we have a typical metallic cough and also the metallic intonation of the voice, even when the cough is not present. The physical signs of obstructions are to be seen by inspection, with the use of the pharyngoscope, the abscess appearing as a tumor-like structure in the pharynx. It is to be differentiated from malignant and real tumors by the fact that it is

always fluctuated by the pressure and tenuity of the fingers.

History. As an acute condition it generally lasts from one to two weeks with a marked tendency to become chronic, disappearing, then recurring and so on. The symptoms or sign of the recurrence of the condition is sudden feverishness, with languor of the patient and localized intense pain.

Treatment. Treat as a typical case of pharyngitis, paying special attention to the suffocation tendency, e.g. strong stimulation of the lymphatic system. To get sufficient lymphatic circulation stimulate the heart action. second, third and fourth dorsal, to increase the force of the heart, and in addition to this increase the peripheral resistance through the depressor nerve at the head of the 1st rib.

If the abscess becomes pointed follow the surgical rule to open and drain the pus, because the pus here is not sterilized: wash out the pharynx well with some antiseptic solution.

Attend to the constitutional condition of the patient, giving tonic treatment to build up the constitution, that the patient may get over the condition.

Diet. No meat but a fluid diet, as the pus here is not sterile owing to location and also being secondary to infective condition and we do not wish it to be reabsorbed.

Tonsillitis.

Here we have an acute infectious disease also contagious with, inflammation involving the parenchymatous substance of the tonsillar glands, some times it is limited to the follicles and is then called follicular tonsillitis. In some cases it is limited to the superficial mucous membrane, the submucous tissue not being involved at all. This type is called catarrhal type or erythematous, limited to the superficial mucous membrane. In the latter case the catarrhal condition frequently shows itself in the appearance of small vesicles on the superficial surface of the mucous membrane. This is a sub-type of the catarrhal and is called Herpetic.

Catarrhal Tonsillitis. If the inflammatory process extends to the stromatic substance it usually goes on to suppuration and this is called suppurative tonsillitis, or phlegmonous tonsillitis. All forms of tonsillitis are marked by the tendency to recur. In some forms the recurrence become periodical and here we have what is called a periodical tonsillitis. This point is made to differentiate from the chronic tonsillitis or an acute

tonsillitis coming on periodically. It is most commonly found in persons of a rheumatic diathesis or in persons who have gout and in children with the gangrenous or ulcerative diathesis. The latter is a condition that is not quite understood. The characteristic of this condition is that everything abnormal in the child tends to develop ulcers and most generally such children die when there is a localized gangrenous development. Tonsillitis is found at any age, but most commonly from three to ten years, in the suppurative form, most frequently from ten years to puberty. It is most common in the male sex according to statistics. Predisposing causes are:

(1) A low state of vitality, nutritive.

(2) The abnormal excretory function with an attempt to eliminate toxic or irritating substances through the tonsils as excretory glands and that is one standing objection to all localized forms of treatment, e.g. spraying, antitoxins, etc. which only drive the toxin to another area. It usually follows exposure to cold or moisture, but this acts as a cause only when the body is exhausted either from the vital side or the nutritive side. That is one reason why most of the children who have tonsillitis are anemic, the anemia representing the nutritive exhaustion. In the follicular type we can find a condition that is probably always due to bad hygienic conditions. In other words, noxious odors, gases, sewer and basement, toxins irritants act as exciting causes and over stimulate the excretory processes through the tonsils.

Tonsillitis may be said to be hereditary, at least in certain families, alternating with rheumatic conditions. Here the heredity is to be traced to the neurotic conditions. The condition is found most commonly in the spring, probably because of the changes that take place in the system and the liability to exposure in connection with the sudden changes in the weather, etc.

The exciting causes of the susceptibility are injuries, strain, the after effects of food specific lesions found in the upper cervical region. These conditions produce a weakened or impaired condition of the muscular system, interferences with the blood supply and create the field for the deposit and culture of infections, whether of the nature of the intoxications or not. Another point of importance is exposure to atmospheric changes, always produces more or less contraction in the cervical muscles, the muscular condition of contraction reacting by producing disturbances in the vaso-motor and secretory systems. Disturbed vasomotor and secretion result in exaggerated excretion and this is really the physiological cause of tonsillitis.

Morbid Anatomy. The first change in the tonsils is congestive swelling, due to the accumulation and static condition of blood, the blood being in a very static condition. This is followed by inflammatory processes. The congestion and inflammation start at the lateral point of the tonsils and extend toward the median line. If both tonsils are involved, then there is not only tonsillitis but pharyngitis, the pharynx being involved through the fauces and uvula and in the case the involvement travels downward. The continuity of the membranous structures and continuity of fluid will spread the inflammatory processes. The mucous membrane on the surface of the tonsils becomes reddened, then as the reddening, which is sore or less general, becomes local, we find small yellow patches tending to become whitish over the surface of the mucous membrane. These patches indicate;

- (1) Localization of the condition in the follicles.
- (2) The local attempt to eliminate the toxin from the tonsils.
- (3) The weakening of the mucous membrane at these particular points, represented by the patches, followed by necrosis, or by the three points of development of tonsillitis.
- (4) These patches also represent the points of pain. The pain that is found is a stinging, burning pain, localized at the particular points of the patch development.

(5) If the condition continues the auto-intoxication becomes complete and softening with degenerative changes takes place at the point of a patch formation.

Symptoms. In the follicular type, the onset is always sudden, with or without chills. If without, it is with the sensation of rigor, the temperature quickly rises to 104 or 105 degrees, pulse becomes full and bounding and it increases in rapidity as the febrile temperature rises. The rapid rise in temperature and the quick pulse are conscious to the patient. Associated with these we find other symptoms, frontal headache, severe pain in the back and limbs, the pain in the back becoming very intense and associated with rigidity of the muscular system, stiffening of the jaws, associated with tonsillar enlargement, constriction and swelling of the muscles in the neck, dry burning sensation in the muscles of the throat, vocalization becomes nasal, increased salivation and obstructed respiration. The tonsils become swollen, hallowish white, and an exudate found over the crypts in the glands within twenty four hours. Then there is the presence of small points of redness on the surface of the mucous membrane.

These small discrete points become confluent in the in the formation of the typical yellowish white patches, the glands become enlarged and pushed beyond the arches and in small children push into the lumen of the fauces. As a general rule one tonsil is affected first and the affection of the other follows secondarily. There is also the enlargement of the cervical glands on one side which extends to the cervical glands of the other side. After twenty four hours the pain & the back decreases, the tongue becomes coated and the system becomes filled with urates, particularly in connection with the urinary excretion. These urates are the effects and not the cause of tonsillitis.

The course of the attack of tonsillitis in very acute cases is from four to five days. The tonsillitis may, however, after running the acute course, set up a reinfection and you may have another attack of acute tonsillitis and recurring as often as the system can stand it, if not checked. In the later stage albuminuria develops, in some cases leaving behind a typical case of Bright's disease. Kidney and liver irritation are common.

Tonsillitis and rheumatism are sometimes complementary to one another.

In the herpetic type of tonsillitis the principal difference is the pain which becomes exceedingly intense, reacting on the general symptoms, to make the patient more nervous and less capable of resistance, i.e., the intoxication and the effect of intoxication in the system. The other point is the symptoms are a simple and herpetic eruption that appears as the attempt to eliminate the toxin from the system. In the suppurative type added on to the intoxication of the simple and herpetic type, we have the processes of disintegration;

(1) In connection with the end products, e.g., the toxic albumens.

(2) This disintegration is carried on into the blood and we have the dead and dying conditions of the white corpuscles creating the typical suppurative condition both local in tonsils and general in the entire system. The result of this is the presence of intense constitutional disturbance, a very high temperature, with constant tendency to drop to the sub normal, and a very rapid pulse. Here we find symptoms of collapse.

The diagnosis of acute tonsillitis of any of the types is based chiefly on

- (1) Sudden rise in temperature.
- (2) Severe pains in the back, head and throat.
- (3) Presence of albumin in the urine.
- (4) Increased salivation with a change in vocal

intonation, extending all the way from simple hoarseness to loss of voice, always accompanied by stanic rigidity. The last point is not differential, because a similar condition is found in tetanus, but in tetanus there is the closure of the jaws with muscular rigidity.

The difference between tonsillitis and diphtheria is brought out in the first twenty four hours. In tonsillitis the inflammation is limited to the glands and the yellowish white or gray exudation patches are easily removed without hemorrhage or are absolutely superficial on the mucous membrane. In diphtheria false membrane of any ashy gray color is found all over, not in points or patches, extending to the pillars of the fauces, and uvula as well as the soft palate.

Chronic Tonsillitis. Here we have a chronic enlargement of the tonsils, representing a chronic condition, secondary to the acute, or a chronic enlargement following a chronic inflammation, or the growth of adenoid tissues around the pharynx. In cases in which the chronic enlargement follows the acute attack of tonsillitis there are seldom any serious symptoms, the only symptoms being the discomfort of the enlarged tonsils with a sense of fullness and difficulty in deglutition. If the growth or vegetation is naso pharyngeal, there are some marked symptoms, as interference with respiration, fetid odor of the breath, accumulation of the salivary secretion in the glandular crypts. In these cases we have a typical chronic congestion, usually associated with the blood and nerve supply to the naso pharynx and the tonsils. These lesions are not the primary lesions of an acute inflammation, but secondary lesions, vaso motor in their nature, maintaining the chronic congestion and the abnormal excretory function in connection with the tonsillar glands. This explains why ~~these tonsillar enlargements~~ are associated with such diseases as scarlet fever, diphtheria, measles, rheumatism, tuberculosis, and some of the more common skin diseases.

Adenoid Growths. These are sometimes difficult to differentiate from the chronic enlargement of the tonsils. In the majority of cases they are congenital lying in latency for a few years and then coming to the surface, from three to fifteen years of age. This is during the period between the establishment of cerebro spinal control and the climax of puberty. This means that the adenoid growth is a modification of the trophic development, ~~the~~ to non trophic or to atrophic conditions, and that is the theory of the osteopathic treatment of this condition.

The surface of the tonsils becomes very irregular and uneven, causing the opening into the throat to be altered in size and shape, sometimes almost closed. What is the adenoid growth? It represents excreted substance thrown out or a hyperplastic condition, either in the form of an accumulation or as a regular growth. In both cases the enlargement is of lymphoid tissue. This enlargement may be either hard or soft and this will determine the amount of obstruction represented in the symptoms. Primary symptoms are local and are due to the presence of the foreign material or bodies. The secondary symptoms are;

(a) Localized, very similar to the symptoms that we find in catarrhal conditions;

(b) General, the conditions that result from stenosis. In some cases there are no symptoms at all until the tonsils become enlarged secondarily or until the lymphatics are so much dilated that the lymphatic circulation is practically cut off.

In most cases we have primary catarrhal symptoms, a nasal discharge in the form of mucopurulent or crusted material. In other cases the condition passes through the typical nasal catarrh stages. The discharge in this case is mucohemorrhagic while that in the other is mucopurulent. Among the symptoms we have dyspnoea, restlessness, excessive vascosity in the blood, cyanotic symptoms, thickness and hoarseness of voice, difficult deglutition, obstruction to the heart action, dullness of hearing, on account of pressure of adenoid growth or accumulation on the auditory nerve. Then the inflammation process extends into the eustachian tube, causing marked deafness, next interfering with the taste and smell, then exaggerating the secretions of mouth and throat. In some cases causing periodical epistaxis. In children the enlargement is greater both in the direct field of the adenoid growth and adjacent structures than in grown people. In some cases this condition extends to the chest and it is difficult at times to become prominent, sternum angulated, the junction of the sternal bones often being marked by curvature, sometimes anterior, sometimes posterior, lateral or a combination of two or more of these. The diaphragm in these cases becomes very much distorted. Among other symptoms we have persistent headache, indisposition, both mental and physical. Mental condition, particularly in children, are modified by spasms, particularly associated with the face and periodical tendencies to vomiting. Irregular respiration makes the sleep of the patient very much disturbed. Sometimes these are conditions that are secondary to congenital or hereditary syphilis cases.

Treatment. Tonsillitis as we found is an exaggerated abnormal excretory phenomenon, secretion taking place abnormally to prevent a systemic intoxication. Behind tonsillitis, therefore, lies either an intoxication of the system, or a localized intoxication of some kind. In the enlargement of the tonsils the lesions are found:

- (a) Functional enlargement
- (b) Structural enlargement
- (c) Generally, in connection with the whole cervical region:
- (d) Localized, at the first, second and third cervical vertebrae, vaso-motor constriction through the superior cervical ganglion:
- (e) Luxations of the lower cervical vertebrae vaso dilation.
- (f) Contraction of the lateral and posterior cervical tissues:
- (g) Contracture of the suprahyoid tissues:
- (h) Luxations of the clavicles and first rib:
- (i) Lesions involving the deep soft tissues and the cartilagenous attachments of the cervical vertebrae. Lesions of the first three cervical vertebrae affect principally the fifth cranial nerve through the superior cervical ganglion. The lower cervical vertebrae lesions, anterior and posterior deep tissues, the clavicles and first rib lesions, directly obstruct the carotid and jugular circulations
- (j) Sometimes we find lesions in the upper dorsal and even extending ~~ax~~ down to the lower dorsal. These lesions are explained as reflexes from some visceral condition or reflexes in connection with the primary rheumatic disturbance. What is a primary rheumatic disturbance? It is a disturbed condition showing itself in a disturbed elimination which may be in the liver, pancreas, stomach or any secretory organ.

General Treatment.

(1) To the spine, particularly in the neck and the first three cervical vertebrae and the superior cervical ganglion. This should have a general vaso-motor effect on the entire circulation of the blood.

(2) Relax all muscles around the neck, paying particular attention to the supra-hyoid region and the tonsils themselves. Begin this treatment by general inhibition, increasing the depth of the inhibition until the tonsils give rhythmic response

(3) If there be a febrile temperature give patient vaso-motor treatment by inhibition over the superior cervical ganglion on both sides. If febrile temperature is high give inhibition by getting fingers just as close to the spine as possible to bring pressure on the posterior roots and reach the

nerves before they reach the sympathetic system.

(4) Give extension from and rotation to all the cervical vertebrae from above down until the posterior soft tissue are completely relaxed, the object being principally to get ~~through~~ thorough relaxation of the blood vessels and to free all the branching connections of the fifth cranial nerve.

(5) Direct treatment to the anterior throat area in order to relieve the inflammatory conditions by freeing the circulation to and from the tonsils, also to free the carotid and jugular circulations. Particular attention should be paid to the relaxation of the muscles around the junction of the head and neck, such treatment as pulling out the head on the neck, opening the mouth against resistance, kneading treatment deeply beneath the inferior maxillary and downward along the side of the neck to the clavicular junction.

(6) Raising the clavicles in connection with the leverage of the arms to free the external jugular circulation and to relax the anterior cervical tissues also to free lymphatics.

(7) Direct manipulation over the tonsils themselves internally, with one finger using the other hand of fingers externally the object being to support the tonsils from the outside. Give persistent internal treatment to get free venous circulation. You get the best effect by manipulating first the root of the tongue, back of fauces, then around the base of the tonsils, then over the tonsils, where you must manipulate them forward.

(8) Look particularly to the condition of the first rib, in most cases it is rigid at the articulation of the head. First relax the tissues around the head of the rib and then attempt to articulate it by pulling the arm above the patient's head and putting your long finger down on top of the rib anteriorly, then push the head over diagonally to the side, then with the finger pull the head around the other way.

(9) Give strong downward treatment under the angle of the jaw, moving down from the inferior maxillary first around the tonsils, then straight down the neck to the clavicles.

(10) Keep the tonsils free from accumulation of secretions and from the formation of the mucoid substance. If necessary use some form of antiseptic gargle, e.g. salt water will generally serve in a simple case.

(11) Control the febrile temperature as it develops particularly if associated with chilliness:

(12) By treatment of the superior cervical ganglion:

(b) By strong inhibitory treatment downward along the spinous processes of the cervical vertebrae.

(c) Stimulating circulation by tonic treatment (articulatory) downward along the neck of the spine.

d - As an aid to counteract the tendency to suppuration, give lymphatic treatment direct to the lower cervical and upper dorsal strong articulatory treatment, but do not work over the enlarged lymphatic gland.

12 Attend to the constitutional condition of the patient, especially to such organs as the liver, kidneys, intestine, skin, treating the skin by stimulation of the lymphatic centers for the whole body, i.e. the lower cervical and upper dorsal and lower dorsal and upper lumbar.

13. Give the patient fluid diet frequently in severe cases using predigested food in order to prevent possible gastro-intestinal complications. Such complications frequently react on the heart. In the child a rapid heart action and in the adult a slow heart action and here is one of the dangers of tonsillitis. One complication of the disease is the intoxication either in the blood and affects the heart or the brain. The application of hot or cold or both in alteration to the neck, particularly when there are signs of suppurative symptoms. In a case of collapse from suffocation surgical method may have to be taken e.g. lancing the tonsils or tracheotomy. In very acute cases treatment ought to be given every three to four hours to keep the circulation the lymph system and congestion under control.

Treatment for Chronic Tonsillitis. Treatment here is very much the same as in the acute type only it does not require to be given so frequently.

(1) Particular attention should be paid to the correction of the lesions, which is likely to be found in the cervical region.

(2) Give persistent treatment to the tonsils and adjacent glands, i.e. internal, treating toward the tonsils and to the glands under the jaw and along the neck.

(3) See the clavicles and first rib are kept free. Look to the conditions in upper dorsal, particularly in cases of thoracic deformity.

(4) When patient breathes through the mouth, use some form of chin support to enable patient to breathe through nose. If the voice is changed, treat same as in laryngitis.

(5) If the vegetations continue after treating for some time, then they must be removed surgically by pulling them out.

Herpetic type of Tonsillitis Treatment, Give thorough general treatment to the neck local manipulation to the tonsils, soft palate and uvula and treat the condition persistently from the vasomotor standpoint: also keep the lymphatic system and the excretions in thorough going order.

SKIN DISEASES.

There are no skin diseases but skin manifestations of diseases.

The skin represents a most important structure in connection with a great variety of diseases. Its importance may be understood by its analogy with the mucous membrane which represents the internal surface of the body as the skin represents the external surface of the body.

Great stress has always been laid on inflammation, intoxication, and infection of the mucous membrane, whereas very little importance has been attached to the condition of the skin. This may be largely due to the fact that skin diseases have been wrongly classed with venereal diseases.

The condition of the skin requires to be looked at:

(f) From the embryological point of view. The skin originated from the same embryological structure as the nervous system. Therefore it becomes in the adult condition the basis for nearly all if not all sensory expressions of the conditions of the internal organism or the manifestation of the affects that are produced by the attempt to eliminate from the organism substances toxins, secretions or excretions.

Skin diseases are explained by the fact that when substances are thrown out of the body organism they are thrown out toward the surface. The skin is sometimes spoken of as the sensory plate. It is true that on the external surface of the body it is subject to all the impressions that are possible from within. This is the basis for the statement which is justifiable probably in all cases, that, the skin conditions are not, properly speaking, diseases, but expressions or manifestations:

(1) Of some condition of the nervous system.

(b) Of some modifications or expressions in some of the visceral processes.

(2) The skin is of importance from the physiological standpoint, representing a differentiated structure for protection of the sub-surface tissues of the body. The skin acts as a covering over the deeper structures. Physiologically the skin contains blood, lymphatics and nerves, supply corresponding with the organic blood, a nerve system, representing superficially the controlling factor in the vitality of all other tissues and structures in the body from the standpoint of stimulation and sensation. The blood vessels are arranged in several distinct systems.

(a) Superficial in connection with which we find blood vessel corresponding with the papillae, i.e. we have a very minutely differentiated circulatory apparatus. This is why the papillae form such an important part, they are the end organs of the blood

supply, similar to the bulb and placed in the sensory nervous system:

(b) The deep blood vessel system furnishes special blood vessels to the adipose substance, the fascia, hair bulbs and follicles. In this latter case we have also a differentiation of the blood vessel system, corresponding with an end organ characteristic. Each bulb and follicles have a special vascular arrangement of their own. In connection with this minute differentiation of the blood distribution each sebaceous gland receives a special artery, this anastomosing with each gland, the arterial blood supply forming around the gland a dense capillary plexus. Here we have the basis in the plexiform structure of a secretion and excretion of the choroid plexus. That is one of the most important points in skin diseases, we have attempted elimination which shows itself in an eruption, or, the bathing of the surface of the skin in some kind of moisture, as in eczema, a crust formation. This is an exaggerated excretory process to relieve the surface system of something that must be gotten rid of.

The lymph field is important in connection with the skin because the lymphatics are so extensive and the lymph function so persistent in connection with the cuticle. Some of the lymphatics arise in connection with what are called terminals others arise in loops around the papillae. This explains the relation between the blood and lymph systems, the lymph level in the papillae is below the vascular level, i.e. the capillary layer is superficial above the lymph layer. This accounts for the tendency for lymph elimination from the surface of the skin whenever the blood is involved in a condition of congestion, the lymph fluid is an exudation of white serum thrown out from the blood and has an element of sweat. It does not involve the sweat system, however, but relates to the papillae. These minute lymphatics open into a network of small tubules in connection with the lymph system in the deeper layer. From this layer originates the system of large lymphatics of which there are a great number located in the spaces around the hair follicles and the sebaceous and sweat glands. This minute lymphatic system is closely interwoven with the capillary system. The larger glandular and lymphatic system is the reservoir for the excess of the lymphatic fluid secretion. In the skin eruptions the abnormal excretions take place in connection with the minute layer, interwoven with the minute circulatory system and not with the crude layer associated with the sebaceous and sweat glands. It is the complimentary portion of the lymphatic system which has to do only with exudation that takes place on any abnormal condition.

The nerves in connection with the skin are associated principally with :

(a) The sweat secretion:

(b) The sensory terminals found in the sensation of temperature and pressure Contact and cutaneous sense.

Some people make the mistake in classifying those as a general muscular sense. Some are muscular and some are not. Cutaneous senses are sense of touch, taste, weight, and extension and pressure are muscular.

In connection with the sweat secretions we find;

(a) A distinctive vaso motor system, particularly represented by dilator fibres;

(b) Secretory nerves which are entirely independent of the circulatory vaso motor fibres and directly control the sweat secretion and are called the sweat fibres. When the skin and the deeper tissues are absolutely intact, both in structure and function, profuse perspiration is always associated with simultaneous dilatation of the blood vessels. This will modify the physiology of blushing. The old authors say it is a struggle between constriction and dilatation. It is the larger blood system involved and is under the head of secretory function.

The secretory nerves and vaso motor nerves are bound up in the same trunk. There is no transmission of impulses from one to the other, or, a physiology says, there is no radiation. This means we may have the secretion and vasomotor disturbance existing in the skin at the same time without one affecting the other. One of the great fields of skin lotions is complex substances being applied and relieving temporarily but do not cure.

The secretory nerves for the lower extremities are found in the sciatic nerve, passing directly through the spinal cord into the abdominal sympathetics, through the accessory communication established in the anterior spinal nerve roots from the ninth dorsal to the second lumbar. This accessory communication is between the spinal nerve roots and the sympathetics.

For the upper extremities the secretory fibres are found in the ulnar and median nerves. Most of the fibres pass into the upper dorsal sympathetics, a few passing along the anterior nerve roots from the spinal cord in the lower cervical region and upper dorsal. Hence, the sweat center for the upper extremities is located in the lower cervical region and upper dorsal, divided into two portions;

(a) The cervical portion, representing the secretory fibres;

(b) The dorsal portion, representing the vaso motor fibres of the center (sympathetics)

This differentiation brings it down to a point similar to the secretions of the parotid gland - a part controls the solids, and a part the fluids. If

we have an excess of sweat, the cervical portion is involved, and when there is a diminution of sweat, the sympathetics are in dominance. This is not the conditions in the lower extremities. Here we have only a sympathetic center. The cerebro spinal portion for the lower extremities is in the sacral region and here we get a dilator effect.

In connection with the head, face and the brain we find secretory fibres in the dorsal sympathetics, the fibres passing to the stellate ganglion as the center and upward along the sympathetic chain for minute distribution on the face, neck and outer surface of the head and brain. The cephalic portion of the same fibres pass to and is distributed in connection with the fifth nerve.

In connection with this we find that the stimulation of the infraorbital branches causes the stimulation of the sweat secretion on the face. The same fibres have secretory functions which are found directly in the fibres that originate from the roots of the trigeminal and facial nerves. 5 and 7 cranial in ear and nose are constrictors through sympathetic. Hence, there is a center for the sweat secretion in the face, neck and head in general on the floor of the fourth ventricle. This accounts for the fact, which is claimed by Physiologists, that the great sweat center is in the medulla, this sweat center controlling the sweat secretions according to the Physiologists, over the entire surface of the body. The explanation of this is that the center is located in connection with the vascular origin of the fifth and seventh cranial nerves. According to this that would make the control of the general sweat secretions one of the special functions of the fifth and seventh cranial nerves. How does the fifth and seventh cranial nerve control the secretion over the entire surface of the body?

(1) It controls the secretion in the face, neck, head and brain regions through its direct distribution;

(2) It controls the sweat secretion in the rest of the body through the sympathetic system, the connection established through the fifth nerve and seventh and sympathetic system giving us the sympathetic sweat fibres, either - (a) Anastomosing fibres from the fifth and seventh cranial nerves, or (b) Purely sympathetic fibres directly stimulated by the fifth cranial only to function in the sweat system sympathetically. This accounts for sweating feet in brain diseases, because of the abnormal stimulation of the fifth nerve, and secondarily, the sweat fibres in the lower extremities.

The real sweat centers would be in the upper dorsal for the upper half of the body and the sacral region for the lower half, including the extremities.

Variations in the sweat secretions are found;

(1) Of the nature of the diminution or lessening of the secretion called Anidrosis. This is found in diabetes, cancer, most of the febrile conditions, in many of the types of insanity, as in parietic dementia. Secretory motor disturbance. When diseases are associated with a disturbance in the nutrition of the skin and the subcutaneous tissues, in some cases the diminution is produced directly with the paralysis of the nerves corresponding with the localized region of distribution of the sweat fibres or corresponding with the spinal sweat centers.

(2) Hyperhidrosis. Here we have the exaggeration of the sweat secretion, found in excitable people, due to some irritation of the nerves in connection with the impaired condition of the body, low vitality, hysteria and insomnia, along with an excitable condition of nervous system. It may be limited to one half, or to some particular region of the body, found in paralysis, involving the cervical, sympathetic, or an overstimulation of the secretion, in the cervical region osseous, muscular or ligamentous lesions in the sweat centers. It is also found secondary to febrile conditions, rheumatism, septic conditions and some times in the toxemia, vaso motor disturbance. Here it is due to the low nutritive condition of the lungs, associated with the toxic and microorganism development.

(3) Paridrosis. Here we have a modification in quality of the sweat secretion found in the types of puerpura, in vicarious menstruation, sometimes congestion of the brain, when we have blood instead of sweat, also in the bloody sweat of yellow fever, the bile sweat of jaundice, the great sugar sweat in diabetes mellitus, the uric acid sweat of rheumatism, the purulent or odorous sweat associated with the abscess condition of the body or degeneration processes taking place in the tissues, the typical self, due to the presence of some toxin, parasite or microorganism.

In connection with the skin and various forms of diseases associated with the skin we must remember what functions are discharged by the skin. Skin diseases are expressions or manifestations of some disturbance in other parts of the body, particularly of the nervous system. The skin is the great natural medium of the excretion. It is likely to pick up the excretion first. This is why the eruptions and rashes come out so soon in the course of eruptive diseases. All diseases are practically nervous diseases, all expression of disease are some form of excretion.

Among the functions of the skin we find;

(1) The function of maintaining the normal balance

The function of the skin is most active when the air is dry and warm, being the largest amount of perspiration. Hence, the body does not stand a perfectly dry atmosphere but of the degree higher than a water temperature (humidity). The reason for this is that the air is moist evaporation being most active and the temperature of the body rises because heat is not lost from the body from its movement to such an extent that the environment above the heat. A cold blooded animal can stand intense heat without changing its temperature. Human being can stand intense dry heat.

It is absorption taking place in the arterial blood. This conversion of water into latent heat depends into latent heat and the temperature thereby diminished. Evaporation is discharged when water heat is converted through the moist surface. In another way a similar evaporation takes place, heat being taken off. In the discharge of these functions (physiological),

- a. That of excretion
- b. That of condensation
- c. That of absorption

covered over with a little function; for evaporation. To provide for this the skin is also provided in this larger moist field opening up a larger surface for radiation and transpiration to increase the moist layer of skin. Another part of the skin, this increases the extent of the internal surface and finally producing dilatation of the cutaneous vessels, resulting in relaxation of the cutaneous tissue which the vaso motor nervous system skin. An impression is made upon the skin by heat, surface and transpiration.

The body against heat by increasing the cutaneous (voluntary) nervous system. The skin also protects from cold. This contraction takes place through the action of heat is lessened so as to protect the tissues cutaneous surface is lessened in extent and the radiation toward the center of the body and the general tension by which the blood is drawn away from the (a) By the involuntary contraction of the cutaneous in the tissues;

(b) By maintaining the normal standard of heat conductor of heat, hence the skin protects body against cold; The skin and its appendages act as an imperfect between these two degrees. The skin is to maintain the balance of temperature above the one degree below normal. The function of moderating the body to variations with in one degree are structures. The function is performed by means of temperature. The mucous membrane and the skin

2. The second function of the skin is respiration. Oxygen is absorbed by and CO₂ given off from the skin, the amount in either case, being about one fifteenth of a pulmonary respiration. In the frog the skin is only about one two hundred and fiftieth of the pulmonary respiration. This is accounted for by the rapidity of respiration in the frog.

With a slow respiration we get a larger amount of air taken in through the skin, depending largely on the clothing. In connection with the clothing applied to the sick patient, it is better that the patient should not have too many layers of bed clothing, for example, to keep a baby warm one thick blanket is better than several layers.

3. The third function of the skin is sensation. The skin is the great organ of the tactile sense. According to this the skin is like a sensory plate, susceptible to external impressions which are;

(a) Receiving

(b) Recognizing

(c) Localized as to size, shape, etc., all parts of the skin having common sensibility, some portions in addition having a special sensibility, e.g. face, neck, the median structure of the thorax along the sternum and the inner surface of the arms represent specialized sensibility.

Sensibility varies according to thick or thin skin. When the skin is thick, sensibility is associated with the epidermal layer because when the epidermal layer is removed and the corium is exposed the sensibility is lost. This does not mean that there is no pain, but that there is no tactility. The degree of tactility varies according to the number of papillae that are present in the skin. This means that the papillary structure is more or less a specialized organ.

There is a difference of opinion as to what function the papillae discharge. We figure it out that an impression is made on the epidermis, that being the receptive part of the apparatus, the impression is then transmitted from the epidermis to the papillae so that the papillae interpret the sense received on the surface of the skin. In other words, the epidermis is the most direct receiver of stimulation and the medium of conveying the impression to the minute nerve terminals. This means that the tactile bodies in the skin act mechanically by;

(a) Furnishing support for the terminal endings or nerves.

(b) By furnishing a hard surface against which the delicate nerves can be pressed. According to this the sense of tactility represents a mechanical

sense. Hence all superficial skin sense must imply

- (1) Contact
- (2) Pressure
- (3) Temperature

This will explain why in osteopathic treatment different degrees of pressure give different results, because they affect the nerves in different ways. This brings up the question of contact and pressure being necessary in surface impressions.

Ticklishness is caused by the nerve endings being so near the surface. We must distinguish between deep and surface ticklishness, which can be removed by treatment.

The fourth function of the skin is absorption. Physiology has demonstrated that the skin is a freely osmosing membrane and this applies to gases, to fluids, and also to solids, whether freely in solution or not, and this means that the skin is a freely absorbing structure, which function is of great service in connection with the treatment because it indicates that the bath can be used as a means of promoting absorption. The principle factor in determining the degree of absorption is temperature, that is, the temperature of the bath. If the bath, for example, is at 90 degrees the process of loss and gain will be evenly balanced. The body will absorb as much as it will throw off. This established a free internal and external osmosis. Soap will assist the process of absorption.

In the tepid bath or cold bath, the body gains by absorption. In hot bath no absorption, hence the advantage of the bath in salt water, certain of the salt elements are absorbed into the body. In rickets bath the neck and legs in sea salt water. There is value also in hot springs, that is, absorption of sulphate of iron salts, takes place. Hot baths are usually recommended. These are all right if you want to stimulate the excretion from the body. If you want to absorb into the body in constituents of the spring water, cold baths must be used.

In addition to this absorption of soluble substances can be forced in connection with the bath. The absorption is slow and the best way to stimulate it is by the use of friction on the surface of the skin. This is used when mercury is given in the bath. Oils and fats can also be absorbed into the body, through the skin under the influence of (a) temperature, (b) friction, olive oil of eucalyptus. Have the oils slightly above the body temperature. To get the temperature get heat on the body while rubbing. Have patient before a fire. This gives

greater absorption than if the oil is heated.
(c) A volatile or alcoholic substance added to the oil, either of chloroform, or spirits of eucalyptus oil added to olive oil will cause it to absorb. If no heat can be applied, heat the olive oil then add the eucalyptus. Never use turpentine under any circumstances, it will cause nephritis, it is eliminated very rapidly. Use terebinth.

HYPEREMIA

Here we have a primary condition, either inflammatory or irritative leading up to an inflammatory condition. It represents an acute affection of the skin associated with abnormal blood supply in the epidermal blood vessels. It is generally marked by discoloration that disappears. It is also accompanied by an increase of local temperature due to the fact that hyperemia disturbs or interrupts the heat distribution, it is not febrile in its nature. There are two types of hyperemia;

a. Idiopathic. Here we find heat, cold, friction or pressure, due to the action of some irritating substance.

b. Sympathetic hyperemia. Here we have a secondary condition, associated with gastro intestinal diseases, disturbances of the stomach, particularly in the child. Face generally the point to show the condition. It begins with a slight redness of the skin, gradually increasing until it becomes a bright red or purple color. The extent and form of congestion depends on the course of the original disease and probably on the extent of the gastro intestinal disturbance. The starting point is generally a superficial stasis, reacting to the circulation in the visceral, due to the fact that the deep visceral circulation is interfering with the reaction producing the congestion, congestion or change in the blood supply in the surface blood vessels. There is an increase in the local temperature and generally a slight itching and burning sense, followed by skin discoloration. In some cases it is difficult to differentiate a simple hyperemia from a dermatitis.

Erythema Intertrigo is the most typical form of hyperemia. Here we have hyperemia produced by friction the simple irritation of heat, sometimes by contact, friction or rubbing of the separate or opposite surfaces. Sometimes called Erythema Simplex.

The skin becomes reddened there is a burning and itching sensation and sometimes in extreme cases there is the rubbing off of the surface of the skin. This is found in connection with the natural folds of the skin, as in axillary and inguinal region.

The exciting causes are heat, pressure, friction, gastro intestinal disturbances, reacting through lymphatic field, sometimes poison, associated with drying garments. The predisposing causes represent anything that tends to produce hypersensitiveness on the surface of the skin, e.g., very rough clothing, neurasthenic conditions, great environmental heat in the summer season, excessive exercise, deficient

sweat secretion, particularly associated with constipation or with individuals of sedentary habits.

The pathology of these conditions begins as in (1) a hypervaso dilation; from cerebro spinal side; the blood vessels in the corium of the skin being abnormally dilated. This is accompanied or followed by (2) excessive perspiration, the (3) accumulated sweat producing a separation of the epidermal structure from the corium, sometimes causing such a separation as to be called traumatic conditions in the epidermis. The erythema is generally easily identified from its location. The only other condition with which it is liable to be confounded is an hereditary syphilitic condition of the skin. Here we will find differential syphilitic lesions, in the skin and mucous membrane, in the form of mucous patches or ulcers in the mouth.

Sometimes the erythema is secondary to a dermatitis, this being the exciting acute cause of the following erythema. In some cases (5) this erythema passes over into the excretory condition and may become a typical chronic eczema, an eczema that comes and goes with acute phases every seven, ten or fourteen days. It is really a skin diathesis showing itself in these acute excretory conditions.

II Hemorrhage into the skin. These occur from the primary rupture of the blood vessels, resulting from external injury, or as a form of cutaneous diapedesis. In the latter case the blood vessel wall is weakened or repaired, allowing the corpuscles to escape through the walls without, as a rule, and plasma or serum exude. In most cases rupture is found in the corium capillaries. In some cases the blood comes out by an endosmotic process, passing into and settling in the epidermis. In most of these cases the extravasation of blood represents a diffusion of the blood substance on the surface of the skin. Among the types of hemorrhage we have;

(a) Petechias. These represent small, rounded sometimes irregularly shaped spots on the surface of the skin.

(b) Violins. These are large narrow streaks of extravasation, being distinguished from the petechia only by their shape;

(c) Hemorrhage patches. Of these there are two types.

(1) Echyrosis, in which we have small irregular patches, more or less extensive in the particular location involved, found especially in the extremities.

(2) Echymsa. These are small, flat or beveled, discrete patches, found located on the surface of the body near to some blood supply. If the hemorrhage is caused by an external injury it is called traumatic or idiopathic and is found principally in the form called contusion. If found in connection with some other disease, it is called the symptomatic ecchymosis,

or ecchymata, e.g., hemorrhage found in small pox, typhoid or typhus fever, etc.

(d) Hematoxydrosis. Hemorrhage in combination or in conjunction with excessive sweat. Here the hemorrhage takes place through the sweat glands. This discharge of blood in connection with sweat system is found in what are called stigmata of blood sweat and sometimes in certain types of neurosis.

The general symptomatic conditions. These are both local and constitutional. The most common constitutional symptoms are those associated with the stomach intestinal tract and may appear in a variety of forms, indigestion, constipation, auto-intoxication, diarrhoea, etc. Here there is always a discoloration of the skin, depending on the type of toxin (2) Then we have neurotic conditions expressed in connection with malfunctionings, particularly in the form of menstrual disturbances and urinary derangements of some kind. These are explained on the basis of the skin and nervous system, both embryologically and physiologically.

On the subjective side we have such symptoms as aesthesias, as itching, burning pain, hyperaesthesia or anaesthesia, located in the skin. On the objective side the symptoms are associated with structural changes of the skin, either primarily, pathological, or the result of some pathological condition, e.g. we find these both primary and secondary, primary in connection with small circumscribed points on the skin, representing changes in color without any elevation or depression on the surface of the skin. Then we find erythema as a primary condition, a more or less diffused redness, associated with an active congestion of the minute capillaries in the corium.

We have also what are called Urticariae. These are small flat or ovoid elevations on the surface of the skin, with a pale or white central point and reddened circumference around the central point. When we have the papillus, representing small ovoid elevations of the skin and these are new structural developments, not the normal papillae.

We also find tubercles, which are new formation, representing the intensified growth of the papule or a later stage of the preceding, either in the benign or in the malignant form. The papules are always benign, but the tubercles are always malignant.

Tumors of the skin represent solid formation within the skin structures, originating in the corium or subcutaneous structures and then growing out by the force of pressure against the epidermis until, by fluid accumulation representing a dumping ground of the system, a new growth of structure takes place and any type of tumor may develop from the histological side. May originate following long stage of

dysmenorrhoea.

Blebs or Blisters representing a spherical elevation of a part of the surface of the epidermis, elevated above the surface of the surrounding epidermis in order to provide a kind of sack for serum blood or mucous purulent matter.

The Pustule is also an epidermic elevation with the lymphatic and capillary blood vessels of the corium, pus corpuscles lymph corpuscles and serum accumulating as the blood diss and disintegrates.

Secondary conditions associated with the skin;

(1) Excoriation, representing the loss of substance from the superficial layers of the skin. This is a result of traumatic conditions, generally in the form of the frictional removal of the upper surface of the epidermis. In most cases the excoriation in small points from which the serum or blood exudes. These are liable, if infected, to result in little abscesses or ulcerative conditions on the surface of the skin.

(2) Gangrenous conditions on the surface of the skin, representing small masses of dead matter in connection with the epidermis. Here we find portions of the epidermal layer first of all separated from the deeper structures and following the separation

(3) the dying of the separated surface structures, which assume a white or grayish color. This condition requires to be minutely distinguished from leprosy. This gangrene involves only the epidermis whereas leprosy involves the subcutaneous structures. This has been called the epidermal leprosy, but it is a mistake.

(3) Incrustation of the skin. Here we have the formation of solid masses representing solidified fluid in connection with a drying process. The first stage is the exudation, or the extravasation of fluid on the surface of the skin. Sometimes the accumulation on the surface of the skin of an excessive sebaceous secretion. In the second stage the exudate becomes solid, either by the resorption of the watery part of the fluid, or by evaporation, the semi fluid coagulating and remaining in a incrustated mass on the surface of the epidermis. Note that this involves only the epidermis and thus differs from the encrustation (evanescent) in which the incrustation extends to the subcutaneous structures.

(4) Cutaneous cracks or fissures superficial. These represent lesions or wounds of the skin produced by an abnormal vascular or subcutaneous action, limited to the epidermis, at least in the

simple form. Here we have an anemic condition of the epidermis, or of the mucous membrane, followed by the abnormal action of the subcutaneous or submucous structure, resulting in the fissure formation. It is on the same lines as the cracks we get on the surface of the earth in earthquakes. Sometimes poisonous.

(5) Ulcers. These represent - (a) inflammatory conditions followed by (b) the solution of continuity of the epidermal structure, caused by the suppurative destruction of the tissue on the surface of the body, involving the epidermis and the corium. In some cases it begins in the subcutaneous tissues, beneath the corium and extends upward beneath the corium and epidermis.

(3) New formation of connective tissue, called the cicatricial formation substance or tissue. This is the proliferation of the new connective tissue in connection with a wound, particularly when the muscle tissue is involved. In the epidermis and corium cicatrization is generally a temporary process in connection with the uniting of separate surfaces, the cicatricial tissue being gradually absorbed until it is reduced to almost an invisible point or line. When the subcutaneous tissue is involved in connection cicatrization it tends to continue, particularly if the muscle substance is involved.

(7) Pigmentation. Here we have the increase in the amount of coloring matter, either locally or generally due-

(a) To a localized congestion in connection with the surface structure, either epidermal or epidermal or corium, or constitutional anemia, etc.

(b) The chronic inflammation process. In this case the inflammation causes the pigment to be brought to the surface in the circulation to be deposited in the surface structure -

(c) An excessive accumulation of the coloring matter, on account of the excess in the blood in general, deposited on the surface because of the attempted elimination, e.g., the yellow discoloration of jaundice or the bronzing of the skin in Addison's disease.

All indexes of poisoning therefore, note Toxicosis, Hepar patches, etc.

General diagnosis of Skin Diseases.

This depends primarily on the history of the development of the condition. In the so called skin disease care should always be taken to investigate the history of its development, so as to find out what represents the origin or the originating cause of the skin irritation, reacting or obstruction. Nearly all

of the so called skin diseases are to be classified under one of these three heads:

Irritation: Eliminative

Reaction; All toxic (non-accumulating) conditions.
Obstruction.

In the examination of the skin a number of points must be looked after particularly:-

(1) The skin should always be examined in the natural light.

(2) The temperature of the environment of the body should not be over seventy degrees, unless in those cases where you want to watch or notice variations that may take place in the skin as the result of the change of temperature or variations of color. The principal point is the change in color in high or lower temperature. Artificial light will sometimes change the color of the skin other than it appears in daylight.

In all cases where the skin is involved in the so-called skin diseases portions of the surface of the body other than the affected part. We may find variations in color. Sometimes found along the spine. Different colors indicate localized disturbances of the circulations, localized in the region or regional centers. The palpation of the surface of the skin without unnecessary friction will indicate the condition of the corium.

5. Notice particularly the reaction of particular portions of the skin to constitutional disturbances, e.g. the field and (6) force of development of herpes in relation to disturbances of the digestive apparatus etc. Note also the presence of the (7) inflammatory condition of the skin and differentiate inflammation clearly from a febrile condition of the skin. Dryness of skin or heat in the body. Diet may modify these conditions very markedly.

8. In some cases in diagnosis of skin conditions the age has a particular bearing on the skin, e.g., psoriasis is a condition that is always associated unless in some possible hereditary type, to the period of life following maturity 18 to 21 years. Epithelioma of the skin is associated with the period following the beginning of the decline of life. - 45 years of age.

9. Sometimes the occupation of the patient has an important bearing on the condition of the skin, e.g. some types of eczema are typically associated with some manual labor, particularly when there is an excessive perspiration. One type called blacksmith's eczema and here the upper half of the body being so much more active than the other half. Boils and carbuncles are also found associated with some

occupation, e.g., workers among hides, wools, etc. Acne is a condition that is found almost exclusively among those of sedentary habits. Dermatitis is found among those who work in dyes and chemicals.

Pathology of Skin Diseases.

All skin diseases are expressions of some other disease, or of some other condition of the body, either atrophic or hypertrophic, at least in the effect it produced on the skin. The reason for that is that the skin diseases, so called, represent the disturbance of the trophic function. This will mean that all the so called skin diseases have certain morbid processes, secondary to the disturbed trophicity.

Here the pathology generally begins in the corium because that is the portion of the skin which has the free blood supply and the larger nerve supply. All morbid anatomy in the skin disease will therefore resolve itself into;

(a) Anemia. This indicates a local deficiency in the blood supply, involving the cutaneous capillaries, usually the result of some disease in some other portion of the body, or, a reaction from a disease in some other part of the body.

(b) Hyperemia. Here we have the congestion of the corium, active, if it is associated with heat, cold or irritation, poison, friction, etc. The symptoms or signs of this active congestion is the tingling or burning sensation. The passive congestion is associated with reflex relaxation of the capillaries or a local obstruction of the venous circulation, e.g., thrombosis, or a systemic interference with the venous circulation.

Secondary to the hyperemia we have —

(c) The pathology of the inflammation of the skin. The inflammation is always preceded by a congestion and the congestion is secondary to a dilatation of the arterioles, resulting —

- (1) An increased blood flow;
- (2) An increased rate in the blood current;
- (3) Obstruction of the capillary circulation,

the walls of the capillaries being dilated to their utmost capacity producing peripheral resistance to the blood circulation in the arterioles;

(4) Following the obstruction of the circulation of the capillary walls soften and the plasma is exuded through the walls, sometimes followed by the passage of the blood corpuscles. In either case

(5) There is the static condition of the blood and the accumulation of fluid in the tissue around the capillaries. Primarily this accumulation affects the skin, secondarily it extends to the subcutaneous structures;

(6) In some diseases, e.g., herpes and syzema of the pustula type, there is the exudation of the seroud fluid in connection with the papillae, or the exudation of a semi fluid substance in the pustular stage, this pustular fluid being distributed in the corium and subcutaneous tissues adjacent to the point of exudation.

(7) Following anemia there is the tendency of the drying of the skin structures, with atendency to desquamation in connection with the epithelial portion of the skin. Sometimes this may extend down into the deeper structures and may go on into a dry gangrenous condition. Epithelioma, etc.

(8) Degenerative processes may follow either of the preceding conditions, the degenerative changes representing the destructive processes of disintegration, sloughing, etc. In the diagnosis of the skin diseases, so called, it is important to note the presence of neurosis and the form that it assumes in the particular case, e.g.,

(1) Anaesthesia, representing the primary neurotic condition of the skin. This is rarely found primarily to the skin itself, that is, it is always associated with some systemic condition, such as leprosy, syphilis, hysteria, or traumatism, secondary to systemic toxic action or excessive heat or cold, in connection, or as a reaction from the systemic condition. Excessive vascosity, etc.

(2) Hyperaesthesia. This condition of excited sensibility in connection with the skin does not involve any outaneous structural changes but is found as a sign of functional or organic disease of the nervous system. This is found particularly in hysteria or in traumatism, secondary to the systemic toxic action.

(3) Paraesthesia. Here we have a neurotic condition that represents the perverted sensitive condition of the skin, showing itself by such symptoms as a tingling, creeping, crawling, sensation over the surface of the skin, sometimes the burning sensation, or itching. It may be found at any period of life but more particularly in middle and advanced life, particularly associated with disturbance of the venous circulation, e.g., the hyperaesthesia of skin in varicose veins, etc.

Paraesthesia is always more marked during the cold season. This is due to the fact that the organic and functional derangement of the nervous system in attempt to register themselves on the skin meet the constrictor tendency of the cold weather and conflict in the struggle for control. The above condition is found (a) in all forms of debility, general and particularly (b) in those who extensively use

irritating drug substances or toxic substances; (c) in gastro intestinal disturbances where food acts as an irritant, etc. and reacting back on the skin.

These neurotic conditions are all functional, hence there are no structural or morbid anatomy changes. They imply the impairment of the nerve force changing its active distribution through the skin, lacking nerve stimuli in the performance of the skin functions. If these neurotic conditions persist, however, there may be a secondary alteration found in connection with the skin on account of the disturbance in the circulation and consequently in the nutrition, resulting from the functional impairment and sometimes this is an element required to be taken into account of, e.g., friction, rubbing, stretching, etc. In this case there is a local change in the papillae, sometimes resulting in a hypertrophic condition, sometimes in the formation of abnormal tissue elements. In some cases we have an erythematous condition manifested by the eruptive tendency on the surface of the skin. That is found more particularly when we have it associated in any way with friction or scratching, of the skin, etc.

General Treatment of Skin Diseases.

In the treatment of diseases of the skin we must always look for some cause that produces a disturbance, either of the (a) blood or (b) nerve functions. Especially do we look for some external disturbance in the form of a lesion affecting the lymphatic area in the lower cervical and upper dorsal, lower dorsal and upper lumbar and sacral regions; lesions affecting the lower part of the digestive apparatus or the genito urinary system.

These general lesions have sometimes a specific side at some point in the vaso motor field corresponding with a localized skin condition, (a) One reason why we find so many skin diseases, so called, in the neighborhood of the face and neck, is because of the predominance of the sympathetic system in the skin function of the face and neck, including sweat and sebaceous secretions, etc. (b) Another reason is the reaction through the vaso motor system in the sensory field, governed by the superior cervical ganglia. To find a reaction on the face and neck from other portions of the body, the reason being that the sympathetic system here has such an effect on these conditions is that it controls the more solid elements of the secretion. The solid elements such as you find in connection with the thickening of the skin or accumulation of substance in the different layers of the skin is because of the sympathetic control. The cerebro spinal system influence the fluid part of the secretion. In the very cold

climates we have the predominance of the cerebro-spinal system and in the warm, of the sympathetic system, shown in the colder climates in the thinner skin than in the warm climates. This has a bearing to the tendency of the skin diseases of lupus, leprosy in cold climates - from the anaesthetic side - the predominance of the cerebro-spinal function from the motor side - limits the cerebro-spinal side from the sensory function.

In addition to this the principal point is to free the general circulation so as to establish a thorough circulation between the surface and the deep structures. This applies chiefly to the circulation through the spinal cord. Hence one of the most general treatments in skin diseases is articulation of the spine and one treatment wherever you want to get a good effect on the spinal circulation is to have the patient lie on the face as much as possible, pulling all organs from the spinal column and this tends to relieve congestive conditions.

The osteopathic treatment in general of the skin diseases consists in -

(1) Relaxation of the muscles, first along the spine and then in other portions of the body, including the extremities;

(2) The articulation of the spine downward. In the majority of skin diseases this kind of treatment is to be given because it drains the fluids downward with particular reference to the cerebro-spinal fluid.

(3) Stimulation locally of the superficial vaso-motor circulation and particularly stimulation of the excretory organs. This latter point applied to the lymphatic and sweat systems.

(4) In the upper part of the body or upper extremities the lesions are generally found in the upper half of the cervical vertebrae, or in the upper three dorsal areas. If the lower part of the body and extremities are affected, we find the lesions at the fourth and fifth lumbar, or in the lumbosacral and sacro-innominate areas, meaning the adjustment of the lumbar to sacrum, sacrum to innominate or sacrum to coccyx.

(5) In all so-called skin diseases attention must be paid to the constitutional condition of the patient. Treat corresponding to the nervous system that is weakened or impaired so as to build up the weaker part of the nervous system to the standard of the stronger, applying particularly to cerebro-spinal system and the sympathetic system.

(6) In all of the skin diseases, so called, alkaline waters should be used freely because all sweat and sebaceous secretions are acid, whether

above or below the standard, and we want to counteract this to some extent by the free use of alkaline waters both for bathing and drinking. Some few skin diseases require an acid local application for specific purposes, but the constitution needs the alkaline waters.

(7) Attend to the hygiene of the patient, especially in connection with these types of skin diseases where eruptions are found, or rather are present, or where there are excoriations or desquamations of the skin. In connection with this the ventilation of the skin should be attended to in connection with the free current of air and baths, which is not often considered. The clothing should be of open weave and not impervious to air and several light garments rather than one heavy single one should be worn.

In the subacute and chronic conditions the clothing should be changed every night and morning and the same clothing should not be worn night and day. Some simply dry the clothing and put it on the next day this is all right if the skin is normal. In the subacute and abnormal conditions however, the clothing should not be worn two successive days without washing. Another point in regard to the clothing in such skin diseases is to eliminate all dye elements in clothing worn next to the skin.

(8) In all skin diseases, so-called, the patient should have active exercise guarding against over exercise, and when patient's body, in connection with eczema is covered with perspiration, the skin should be lightly sponged with tepid water. In certain cases, later discussed, we find the water should be alkaline unless there is no perspiration. If no perspiration then take acidified bath, in other it should be acidified.

(9) Diet. In all skin diseases diet should be restricted in quantity so as to avoid imperfect digestion in any way. Diet is one of the most important of the irritating conditions in skin diseases. This is due to the retention and accumulation of toxins within the body, these showing up on the surface of the skin in connection with itching or in connection with elimination of the secretory glands.

Among the foods that are to be eliminated or modified are: Excessive nitrogenous foods, alcoholic substances, as these produce functional disturbances of the skin. In the organic diseases of the skin the foods should always be freely digestible. In some cases predigested foods should be used in order to prevent the possible development of the toxin in the alimentary tract. Animal food is always irritating in the skin diseases, largely because of the extensive functional activity of the liver in

disposing of the animal food,. Fatty materials in the majority of skin diseases, also represent irritants because of the tendency of amylicaceous substance formation. Saccharine materials are also to be limited because of the tendency of fermentation processes. In lactic acid conditions limit the nitrogenous food elements to a minimum.

In the acute form of eczema, especially when it extends over a large surface of the body, the diet ought to be concentrated as much as possible, as to its nutritious elements, eliminating all indigestible elements, e.g. in vegetable elements, such as have woody fibres, etc. predigested food would be advisable. This is to prevent waste getting into the blood. Eczema is really an elimination through the skin of waste elements. In eczema, in the gouty subject eliminate all alcoholic substances and saccharine substances should be reduced to a minimum. In rheumatic eczema eliminate all food that will undergo fermentation.

In the scrofulous conditions give as much fatty food as possible, in the form of cream, butter, cod liver oil, etc. Milk is a very good form in which to supply the different food elements in eczema, provided the patient is able to assimilate it. People past middle life should not be put on a milk diet exclusively, though they might take a small portion in milk form. If the eczema is associated with diabetes eliminate all saccharine substances and all of the nitrogenous foods that are liable to fermentation.

In seborrhoeic conditions give sufficient food in vegetable form. In anæmia give diet from the standpoint of anæmia. In suppurative and pustular conditions, if these are multiple and extensive over the skin, give digestible food in the form of liquid. If there is the tendency to localize, the suppurative condition, give the food as dry as possible, or, in abscess elsewhere, treating absorption, vegetable food, eggs and milk are good.

In boils and carbuncles stimulate the nutritive process by forcing the use of very easily digestible substances. Boils and carbuncles represent malnutrition and the nutrition must be built up. Oil of some kind, either internal or external, or both, is very good form in which to introduce fatty material into the system, particularly if there is a faulty assimilation. There are many ways in which oils may be given, the best being in the emulsion form. One advantage is that the fat is emulsified in such fine form that it is easily assimilated. Another advantage is that it is not a single fat but represents a multiple form of fats. In some cases the oil can be

best taken hypodermically. In this case it is injected in the tissues along the back. This is a substitute for the rubbing on of any oil in a child. In an adult the skin will resist the absorption. This injected material is particularly applicable in syphilitic conditions localizing the oil in the subcutaneous fascia and thus keeps the subcutaneous tissue bathed in oil.

10. Localized measures to be adopted in connection with skin diseases. Here we mean the local application of antiseptics, ointments, lotions, etc. are to be set aside except as a lubricant, etc.

In most cases lotions and ointments may be set aside entirely, except in some of the rare cases where they might be applicable in cases of severe itching or to produce a lubricant to the skin where the skin lacks the lubricating fluid. The best method of introducing local substances into the skin, when necessary, is through the bath. In order to prevent the deposit of the substance itself in the epidermis and to assist the elimination of waste matter, the removal of the scales, crusts, etc., from the surface of the skin should first receive attention. In connection with the application of lubricating solvents etc., use the osteopathic treatment to lessen the vascular excitement and to relax the muscular tension, depending upon the relaxation and free circulation for emollient action. The resultant effect upon the skin will be stimulation or inhibition, as the case calls for. As an accessory to the osteopathic treatment use the bath, hot or cold, determined by the treatment principles before laid down. In using the bath in skin diseases there are two points to be particularly noted.

(a) Always use the soft water, if hard has to be used, then use some of the expedients indicated by chemistry to soften the water, e.g. borax, sodium phosphate or carbonate, about 100 grains to the gallon of water. This ought to be attended to particularly in hypertrophic condition of the skin and in all cases of inflammation, e.g. dermatitis, eczematous conditions, etc.

(b) In using the bath, unless where there are open sores, always use water with soap in solution. Hot water is especially recommended when the glands of the skin are affected, e.g., in acne, also to relieve local sensibility, as in dermatitis, and to help in the absorption of fluid, as in erythema and syphilis.

The hot air bath is recommended, psoriasis and syphilitic conditions or affections of the skin. This can be applied by the generation of hot air in connection with the spirit lamp, wrapping the patient in a blanket as placing the lamp so as to get the

heat. The temperature around the patient should be raised to around 130 or 140 degrees.

The medicated bath is sometimes necessary, as a local counteracting measure, to meet, for example, an acid condition of the skin by an acid in solution, e.g., HCl also by using an alkaline substance to meet an acid condition, e.g., bicarbonate of soda, say in 15 or 20 gallons of water use 6 or 7 ounces of bicarbonate. In using HCl use one ounce to 100 gallons of H₂O

An astringent bath sometimes used, the common astringent being alum, 4 or 5 ounces to 15 or 20 gallons water. What is called the syphilitic bath, one or three drams of bichloride of mercury to one dram of HCl.

The vapor bath is very good, particularly -
 (1) In rheumatic or (2) acid conditions. (3) in syphilitic conditions. In severe cases where the skin is involved, softening of the skin can be produced most readily by the use of the vapor bath.

Special treatment of skin Diseases.

Hyperemia or Hemorrhage of the Skin. Here we have as an underlying cause a disturbance in the equilibrium of the circulation between the superficial and the deep or between the superficial skin circulation and the subcutaneous circulation. In the chronic condition we may find lesions in the upper dorsal of the head and face, an involvement in the upper cervical or the lower cervical regions, the latter particularly when the scalp and ears are involved and also the lips where you have a tendency to white eyes and nose, lips and ears, etc.

General treatment aimed at equalization of the blood circulation. You require to diagnose the condition accurately to be sure whether the trouble is between the superficial or deep or the cutaneous or subcutaneous. The center for equilibrium in the deep circulation is the upper dorsal region. Treat here. In cutaneous and subcutaneous more direct treatment all over the surface of the body, deep massage to get down to the fascia and soft subcutaneous structures.

2. In the idiopathic Erythema Simplex local irritation may be removed by local inhibitive treatment and the application of cold compresses. Note that the ice compresses should not be used unless used in connection with the application of oil because the extreme cold is too great and would give a reaction of the erythema again after removal.

3. Erythema Intertrigo. Look especially to such conditions as aggravated constipation. Attend to the hygienic conditions of the patient and the local

bathing of the affected part in hot water two or three times per day. Always remember that the parts are to be dried with soft cloths without any friction and do not use soap unless hard water, when it should be in solution or to soften the water. Keep the surfaces separated by dry muslin or linen. An old idea was to scotch the linen, which is excellent in such cases and may remove the irritation.

4. General vaso motor treatment, 2 Dor. - 2 Lbr local vaso motor if there is a localized condition, e.g., if the hyperemia hemorrhage or erythema is limited to the face. Here you would also need in addition local vaso motor treatment in the face.

5. Pay particularly attention to the kidneys, giving diuretic treatment to stimulate secretion of urine at 11. and 12. dorsal. Articulation followed by strong articulation at 4 - 5 dorsal.

6. Treatment of the gastro intestinal tract, so as to keep up the normal digestive processes. Pay attention to diet of the patient so as to avoid dyspeptic conditions and keep down irritation conditions, etc. Attention to the possible presence of worms, e.g. in case of a child.

7. In disturbed conditions of the blood conjointly with the sweat secretion attend particularly to the building up of the nervous system and to the removal of all irritating substances or conditions that would affect either blood or sweat, e.g., accumulations of substances on the surface of the body. Give the patient rest and if the hemorrhagic condition is extensive deal with it as you would a typical epistaxis or other form of hemorrhage through the vaso motor system.

Neurosis of the skin. Here the condition is generally a reaction from some form of nervous disease. In some cases it becomes localized in a particular portion of the body. Here the circulatory, sweat and other skin functions are over stimulated or inhibited and we may find in these cases local lesions corresponding with that particular portion of the skin affected.

1. Pay particular attention to the nervous system as a whole and treat particularly the nervous disease or condition that lies back of the skin neurosis.

2. In Dermatolgia or Neuralgic condition of the skin look to rheumatism, constipation, constitutional conditions, like diabetes, malaria and anemia as the exciting causes and treat accordingly. For palliative treatment use the hot or cold pack or the vapor bath, if the pain becomes very intense. In some cases you can control the condition by electricity, what is called the static breeze or the static spray. In some cases

the menthol application will temporarily control the algic condition of the skin. Following the use of the palliative measures stimulate the blood circulation in the local region corresponding with the part involved.

3. In paraesthesia look for the cause in connection with aggravated constipation either in the acute or chronic form or some constitutional disease, e.g., tuberculosis or diabetes or a toxemia. Look out particularly for paraesthesia that accompanies or follows meningitis or diphtheritic or precedes post diphtheritic paralysis. In all of these cases the best method to temporarily control the condition is through the blood circulation.

In the anemic type of paraesthesia or in the paraesthesia that accompanies debility one of the best measures of dealing with this is by hypodermic injection of cod liver oil into the soft fascia of the parts involved accompanied by a thorough circulatory treatment. Another type frequently found is associated with dismenorrhea or paraesthesia, preceding anaesthesia found in connection with the menopause in some cases lasting as long as the change in progress and sometimes ending in a false paralysis. Establish a thorough circulation. In all such cases have the patient take plenty of exercise in the open air. Eliminate all stimulants and all sedatives, e.g., tea, alcohol, etc.

The patient should use hot bath, the turkish or vapor baths, using them not oftener than once in ten days. The object is to clear up the skin thoroughly. Frequent treatment of the surface tissues, kneading, massage, etc.

Disturbances of the Secretory System.

Seborrhea. This is a functional condition representing an exaggeration of the secretory process and the sebaceous glands. It represents an excessive increase of the secretion from the sympathetic nervous system side. This accumulates on or in the skin in some cases forming a surface coating later on and in other cases an infiltration or incrustation.

It is found principally in children who are or have been subject to constitutional disturbances, rachitic scrofulous T B etc. It is also found in later life, particularly in those who have or are susceptible to tuberculosis. It is also found in connection with anaemia and in all acute forms in some of the febrile disease. Is also found in pernicious anaemia in this latter case secondary to exposure. In some cases it is found in children with unhygienic surroundings and conditions and lastly it may be found in connection with the excessive use of certain drug substances, especially those drugs that stimulate action of the secretory system, e.g., mercury.

Seborrhea represents a functional condition, but it may become chronic when the glands are atrophied or when the ducts are involved we have hypertrophy of entire body by obstruction or by the accumulation of the secretion either it is always accompanied by the falling of the hair. It is located in the scalp, the face or on the back. In some cases it extends all over the body, particularly in very young children. Its most common location is on the scalp secondary to anemia, associated with a rigid scalp. There are two forms of the disease:- (1) Seborrhea Oleosa where you have the excessive oily secretion; (2) Seborrhea Siccata, a dry type. In some cases there is the combination of both of these forms.

The most common type is the dry seborrhea siccata. In this case there is the dry yellowish greasy condition of the skin or of the scalp. This type is sometimes called seborrhea capitis. This is found in children and it really represents the continuation after birth of what is called Vernix Caseosa. Underneath the seborrheic mass the skin is dry and hard meaning that the sebaceous glands instead of lubricating the skin are throwing out the lubricating substance on the surface of the body. This represents not the lack of the seborrheic function but the lack of the absorbent skin function. Sometimes in adults we find a type similar in the form of scales.

The Ichthyotic Seborrhea. This condition is to be distinguished from dandruff which represents a slight desquamation process. It is a mild form of obstruction or peeling off of the surface of the skin, whereas the ichthyotic seborrhea is a super-surface formation which takes place by a throwing out of the sebaceous secretion and is the analogous to the ichthyotic leukoplakia found in the tongue.

Then we have another type of seborrhea, seborrhea of the face found at the period of puberty, also almost exclusively in the female sex. In some cases it is found on the cheek, in others on the forehead or nose and in some cases on all of those parts. It appears in the form of a thin dry super-surface scale, the skin below on the removal of the supersurface, condition being red & dry. You have a secondary skin erythema, in connection with the seborrhea facialis caused by the acidity of the seborrheic exudate, the secretion thrown out being acid.

Seborrhea Corporis, most commonly located at the following parts - around the scapula, clavicular, sternal and umbilical areas. Found in the form of yellowish or reddish yellow patches on the

surface of the skin. These patches are also scaly but there is not an erythema of the skin underneath unless the scales are removed by frictional means when the erythema will be produced by the friction.

Seborrhea Genitalium, found in connection with gonorrhoeal conditions caused by the gonorrhoeal toxins hyperstimulating the sebaceous glands causing exudation and deposit of the sebaceous secretion.

Seborrhea Oleosa is found rarely in the form of a fatty covering over the hair or in connection with the hair of the head. In some cases these appear as an oily perspiration and if not removed will coagulate giving a thick oleogenous covering. Seborrhea should be carefully distinguished from eczema and also from psoriasis, especially the dry form of seborrhea. In seborrhea we find scales or small cakes on the surface of the skin, grayish or yellowish gray in color and always slightly oily. In psoriasis it is absolutely dry and the scales are very abundant while in seborrhea the scales are few or scarce to those found in the psoriasis condition.

Lesions. We have lesions involving the sympathetic or circulatory systems, or both, corresponding with the part or parts involved, e.g. most commonly found around the head, and you would look for (1) upper cervical and (2) upper dorsal disturbances. One common condition found in thickness and seborrhea of the face and head is the thickness and enlargement of the scalp at the basi or occipital region. A sort of a naturak seborrhea you will find extending to a great enlargement around the base of the head and of the neck. You will find it also typical in some of the German Nationality, more marked in the Teutonic race, where it seems to be associated with the shortening of the neck. We attribute it to an abnormal or disturbed condition of the lymphatic condition

You will find in all cases of pelvic and abdominal lesions that there is tendency to the same condition in the posterior sacro-iliac region and enlargement and thickening of the muscles and fascia tissue around the sacral region and as the tumor condition develops this band or ridge tends to grow larger even though the body otherwise grows emaciated. In all of these conditions we think it is a lymphatic involvement.

COMEDO This is a derangement of the sebaceous glands consisting of a retention of the sebaceous secretions in connection with the excretory ducts of the glands. This is primarily, therefore an obstructive condition of the ducts, not necessarily involving a seborrhea, though it may. It does not necessarily involve the excessive secretion but the

retention of the secretion. In connection with the duct we find a whitish, yellowing or a blackish accumulation the points being at the surface terminals of the ducts of the glands. It is supposed to be associated with a rapid glandular development, e.g., with the excessive growth of the hair. It is found principally at or after the period of puberty. It is also found in connection with the scrofulous conditions, gastro intestinal disturbances of a toxic nature, menstrual derangement, particularly the dysmenorrhea type. In all of these cases there is a predisposing condition in the constitution, the exciting condition being in the blood. It is sometimes due to the irritative action of chemical substances, found particularly, for example, among those who work among drug substances, as amonia, etc. It is located principally on the face and represents an accumulation of serum and broken down epithelium substances. These These accumulates in and causes the dilatation of the duct. When the gland throws out its oily secretion it is mixed with the substances already accumulated and the skin furnishes the pigment. We also have with these the dust from the atmosphere and we term it black heads, etc.

In some cases the glands are able to relieve themselves, in other cases when the gland is unable to do this, accumulation takes place and there is an artificial papule formation. The primary cause is a hyperplasia of the corneal cells in connection with the skin. This hyperplasia reacts as the irritant on the sebaceous glands and their ducts? It is seldom found in the acute form in which there is a real inflammation process going on with a little red patch, redness of the skin, and local heat, itching. It is most commonly found on the head and face in the chronic form. Each single point represents either a single or double papule, the neighboring glands furnishing the secretion and the duct throwing it out to the point of accumulation. This excretion by the duct is a self preservation process of the sebaceous gland to get rid of the disturbing substance accumulated in the obstructed glands.

MILTUM. This is a condition similar to comedo consisting of the accumulation of the serous fluid in the sebaceous glands, the excretory ducts being obstructed or obliterated, the obstruction going on at the point where the obliteration takes place. Some writers say that it is a cystic condition produced in connection with the hair follicles by the development of the embryonic epithelial substances breaking away from the hair follicles and forming a small whitish round inflammatory cyst in the form of an elevation, beneath the epidermis. The real origin

is associated with (1) localized toxic irritation
 (2) some direct pressure disturbing by intoxication
 the minute nerve terminals in the epidermis. The result
 of this disturbance is the distention of the sebaceous
 glands, the distention being so great,

(a) That the fluid cannot escape from the gland;

(b) The duct becomes destroyed, this disturbance
 of the duct being secondary to the accumulation within
 the gland followed by the coagulation of the substance
 which fills the duct.

Sometimes the gland becomes hardened on account
 of the calcareous deposits and these little miliae are
 usually found as flat little bodies on the epidermal
 surface of the face. The most common point where they
 are found is the upper part of the face, the upper
 eyelids, temples and cheeks. The structure of these
 bodies is that of a whitish or pearly colored substance
 slowly accumulating by a process of elimination. It is
 probably, though the area is no proof of the fact, that
 the source of this substance is the breaking away of
 the minute epithelial particles and gravitating toward
 the sebaceous glands which here take on an abnormal
 excretory function. They are found most commonly in
 the female sex at or after the period of adulthood.
 In the male sex it is also found sometime in connec-
 tion with such diseases as lupus, acne, and syphilis.
 Some writers claim that this type is found in the male
 sex associated with those diseases as a different
 type. We do not think so, but that it is an attempt
 to eliminate the toxin in connection with these condi-
 tions.

Associated with these we have also the typical
 sebaceous cyst commonly called Wen. This appears as a
 prominent rounded tumor or nodule produced by the
 distention of the sebaceous glands with a secondary
 hypertrophy of the walls. The wen is caused by
 the obliteration of the minute capillary circulation.
 The direct cause of this obliteration is unknown. It
 may probably be associated with the irritation or
 pressure of the minute nerve terminals around the
 capillaries or it may be associated with atoxin which
 directly acts upon the capillary wall. The wen
 consists of the substance of the secretion retained
 in the sac, the sac being formed from the distended
 portion of the gland. The substance itself is a
 whitish grayish or yellowish substance consisting
 of principally serum and more or less coloring matter
 which depends on the type of patient, condition of
 skin and the body as a whole. It is found chiefly
 on the scalp, next on the forehead then the eyelids
 and sometimes the neck and shoulders. It may be
 found either in the single or multiple form and is

usually a movable mass varying in size from a very small pea to a walnut. It is not a tumor of the skin but underlies the skin, the wen being normal unless where it becomes distended and thin or loses color on account of the size of the wen. The wen differs from the wart the wart being a modification of the skin. In some cases it results in ulceration and the destruction of the wen, sometimes in the destruction of the sebaceous gland. This is due to a decomposition process and is probably the only evidence we have of a toxin cause. When the decomposition takes place and the breaking up of the wen follows the discharge has a very fetid odor indicating a destructive process and may point to some kind of toxin or poison or the cause of the condition.

TREATMENT. Here we are dealing with secretory conditions, some cause intervening either to irritate, disturb or destroy the secretory process. The conditions that are necessary for secretion in any gland are;

1. Normal structure plus the power of secretion, All secreting tissue in origin is epithelial tissue of the goblet cell type and that explains the tendency in all of these conditions to a rounded mass. This first condition requires the integrity of the normal structure of the gland. Here we have a condition which is often found defective, e.g., there are two possible conditions;

(a) The absence of the sebaceous glands themselves, e.g., in some cases where the skin is exceedingly dry and harsh associated with a histological development of the sebaceous fluid and of course cannot be cured.

(b) The glands which are present are sometimes defective either in structure or function or both. In this latter case the writers on the secretory skin diseases attempt to supply substitution for the serum or they attempt through the drug medium to supply substances to the surface of the skin from within. This however, is impossible as a temporary expedient. The only success which has attended the efforts to supply these substances is by the use of such a substance as pilocarpin which acts as a stimulant in connection with an eliminative process through the perspiration and saliva. The only use, therefore, which drugs of that nature can have, is to promote secretion at the expense of either some other function or the vitality of the body, that is, there is an elimination of certain substances which ought to be retained in the system for the purpose of supplying the external secretion.

2. Circulation. The unobstructed blood supply in connection with secretion. This is brought out particularly in connection with the melius and the sebaceous cyst from which you have obstruction or obliteration causing a lymphatic condition. This is a point in regard to the field of lesions in connection with

(a) The direct blood supply of the skin. Regional S D to S Lbr mostly.

(b) Contractions of muscles and osseous lesions in the vaso motor field involving e.g., the fifth cranial nerve as vaso constrictor contributor, the the vasomotor center in the superior cervical ganglion region or the upper dorsal region;

(c) The vasomotors respond to stimuli from the sensory side, the sensory nerve terminals being found in the skin, mucous membrane and the muscle. These sensory nerve terminals are subject to irritation or pressure by mechanical or chemical stimuli. Hence, the condition of the skin itself particularly if it hardened or thickened or both, may represent the type of lesion illustrated in the negro skin.

The supply of the proper elements of food through the body to the secretory cells. There the food supply is defective in those materials or defective in some materials or excessive in other materials, it is to be regarded as a lesion, e.g., one illustration of this is the connection with leprosy and lupus in Hawaiian islands and Iceland where the people live so largely on fish. Fish does not contain the proximate principles in proper proportions. Another case - scurvy.

4. The unobstructed innervation of the secretory structures. At one time it was supposed that the secretion was governed by vaso motion. This however, did not account for the absence of perspiration when the blood vessels of the skin were dilated, or the presence of the perspiration when the skin was comparatively bloodless. The explanation of this is that the secretory tissue is controlled by secretory nerve fibres. The ecre motor and vaso motor nerves are bound up in the same trunk, hence, lesions involving the one affect the other nerve supply. The two sets of nerves, however, are equally responsive to the same stimuli. This we find in the hot dry skin of the febrile patient, and more heat superficially and the secretory fibres are stimulated with resultant perspiration. This means that vasomotion is stimulated by the lesser heat and secretion by the greater heat.

The explanation of this secretory phenomenon is to be explained on a reflex basis, sensory nerve supply of the skin picking up the greater heat sensation and carrying the sensation to the central nervous system that produced a change;

(a) modifies tension of the blood vessels on the surface of the skin

(b) Increase the activity of the sweat glands, viscera motor. This explains a fact brought out by experimental physiology that the secretory cells may continue to secrete even when the blood vessels are ligated and vice versa. This makes the secretory functional (all secretory functions) a distinctive glandular or cellular process, stimulated by an immediate secretory innervation.

In the treatment of these conditions;

1. In General 1. The general blood circulation must be maintained even when localized obstruction to the circulation exists.

2. Secondary to the general circulation the local circulation in the gland must be kept at its maximum if possible in order to maintain sufficient glandular circulation to provide secretory material. This applies principally to the sympathetic side of the nervous system because this is a solid material. When secretion is kept up in the gland side with suspension of the blood circulation you have a limp secretion lacking in the materials supplied by the blood.

3. The easiest way directly to increase the amount of blood in the gland is the direct manipulation of the gland itself, e.g., direct kneading, vibration or a stimulating treatment of the gland proper. Note, this increase of circulation is only temporary. If you want to keep up the circulation you want to keep up the treatment. This is in relation to volume of blood.

4. To increase the local circulation in the gland permanently we must stimulate the increase of the blood supply in the center of the nervous system which controls the particular gland. By this we mean that the nervous system is a medium not only for the supply of nerve force but for supply of fluid.

5. To affect the local blood supply the heart must be reached. This is best done by readjusting the circulation from two points;

(a) Through the force of the heart beat;
4-5 Dor. Rythm of H beat 3-5 T.

(b) through the increase of the peripheral resistance in the minute arterial circulation.
Sensory nerve to heart depressor nerve.

6. The localized circulation is controlled from the regional centers of distribution in the spine. Hence, to increase the activity of a gland we must not only affect the blood tension through the vaso motion and the general blood force to the heart, but also local force of blood in connection with regional distribution of nerves to the capillary circulation.

7. Secretion, either in the sebaceous or sweat glands, represents a part of the eliminative process. To affect the perspiratory process glands is to cause them to receive materials brought to the cutaneous surface from the deeper organs, particularly the kidneys and intestines. Hence, the modification of blood tension in the surface glands reacts on the blood tension in the kidneys and intestines. This means that the treatment called for in general is a treatment to readjust --

(a) The tension of the blood vessel system, both superficial and deep

(b) The coordination of the secretory function through coordination of cerebro spinal and sympathetic systems.

This explains why the principal parts found in all the secretory skin diseases are located in the interscapular area 1st to 7th dorsal, e.g., are laxation of the muscles in the interscapular area will cause perspiration all over the body. The explanation of this treatment is as follows;

(a) Inhibitory action in the first dorsal area through the cardiac centers located at that area and articulation at the head of the rib and the spinal vertebrae when you want the connection with the sympathetic system.

(b) Action through the vaso constrictor fibres to the blood vessels distributed in the head, neck, upper extremities and upper half of the trunk of the body and the pulmonary system distribution taking place from second to seventh dorsal;

(c) The distribution through the intercostal nerves to the entire muscular membranous structures of the thoracic cavity, pleural membrane, cardiac membrane, etc. This explains why such a treatment is a beneficial treatment in pneumonia, pleurisy, grippe, also in many of the heart conditions. This may not seem to have any relation to seborrhea but this is the chain where you get relief from these conditions by treatment from a similar standpoint from that of those conditions.

8. Reflex conditions in relation to the sweat and seborrhic conditions are also found from the brain or from the mental side. This explains e.g., the reaction of produce perspiration to fear or to intense physical pain. The reflex is, in this case,

established in the upper cervical region, first to fifth cervical inclusive. Palliative treatment can be supplied in these cases -

- (a) By inhibition of the skin itself;
- (b) By the localized application of heat;
- (c) By the articulation of the upper five cervical vertebrae.

The curative treatment will mean the correction of the lesions found in that particular area, muscular, osseous, etc. It is a well known fact that in skin diseases you will find more vibration in mental conditions than in any other type of disease and is explained not only from the standpoint of skin to express the nervous condition, but the close relation of the brain and the secretory system.

B. Specific Treatment. Seborrhoea.

1. Try to open the return blood circulation in connection with the kidneys, 9-10 T. also the collection of waste materials in the general 3-4th. lymphatic circulation stimulation. In addition to this free the large venous system relaxation, saphenous field, axillary field, raise clavicle and let two ribs and increase capillary tension. These points are best attacked to by thorough treatment of the neck, raising clavicles and 2 ribs, expansion of the lungs and elevation of the thorax. In some cases where the ribs are tightly bound each rib should be articulated in relation to the thorax.

Vibration over the seat of the seborrhoeic condition itself e.g., scalp face etc. for rhythmic action of superficial action.

3. Attend to the hygiene of the patient, frequent ablutions, fresh air, exercise and good nutritive food, as potassium salts. Fresh green vegetables etc. Celery is great.

4. Attend to the constipated condition.

5. Attend to the anemic condition of patient, particularly in those cases that are found at the change of life, e.g., puberty, menopause. Stimulate lymphatic system and red marrow of bone.

6. Local application of oil to the scalp or face or involved area to keep the soft tissues moistened, lubricated and soft. (1) olive oil and (2) oil of ergot are best. This is good for its astringent action and also its specific action on the hair follicles and sebaceous glands. Frequently wash the part with soap and water to remove all accumulations of secretions, etc. Use pure soap by all means. Oil of ergot liable to react detrimentally on the pelvic field.

Comedo. Here we have a poisoning of the sebaceous secretion due to the lack of the normal circulatory action. This condition is associated in some way with the pancreas, a deficiency, probably in the pancreatic secretion, with the result that there is an over supply of fat not acted upon because of the absence of the pancreatic element. Some claim that it is due to the inability of the digestive system to prepare the fats in such form as to be disposed of by the pancreatic secretions. In the one case the trouble will be found in the pancreas, from side of pain, secretion, in the other case the intestine from side of secretion and the other a digestive condition. We think the former of the two is the proper condition representing the disease.

In the treatment of these conditions we find lesions in one of two areas;

(1) In the upper half of the dorsal region. In this case the disturbance is vaso motor and referred more particularly to the proper or improper distribution of the blood laden with fat elements.

(2) The other field of lesions is in the splanchnic region. Here the disturbance is undoubtedly secretory and may refer either to the pancreas or intestines or both. In this case there is a disturbance probably in the pancreatic secretion, or some interference with the osmotic functioning of the mucous membrane of the intestines. In treating these conditions;

(1) Pay attention to the upper half of the lower half of the dorsal spine, according as the primary disturbance is located in the one or the other or you determine what the condition is and treat accordingly.

(2) Attend to the digestive tract --- (a) from a vaso motor, (b) from a visceromotor standpoint referring to the different areas that control these different functions, by articulation of the spine.

3. Use salt and water to bathe the face several times per day, about one teaspoonful of salt to a pint of water.

4. Vibration over the skin of the part involved will increase the surface circulation.

5. Strong vibratory treatment over the abdomen in the region of the liver and pancreas particularly, the object being to increase rhythmic action of the organs and thereby control the internal secretion function.

6. Constitutional treatment with particular attention to dyspeptic and constipated condition and uterine condition in the female sex. One of the most common conditions in association with this condition

ispelvic condition of some kind. Another condition mentioned before is suppressed menstruation.

7. Diet the patient on a very freely nutritive diet, i.e. freely assimilable diet - free from waste. One in which there is an absence of extra waste element and one that is quickly disposed of by the digestive tract. You want rapid digestion with as little waste as possible, even to the extent of using predigested food.

8. Free use of soap and water, follow the free bathing of the face or part with soap and water, the best way & apply the soap being in the form of a lather and then take a very hot towel and wrap around over the lather, as barbers do. Follow this by friction with a rough towel and then use alcohol, or rather bay rum on the surface of the skin. You can promote absorption very satisfactory by the free application afterwards of lavender water. Bay rum and lavender water are better than alcohol, as alcohol has an absorbent tendency, which is not beneficial in this case.

MILIUM. Treatment is much the same as in the comedo. You remember that the milium is a cystic condition in the connection with the sebaceous gland. The difference in treatment is the use of potash in the soap and water. In some cases when the cyst has become enlarged it may have to be excised, being too much enlarged to be absorbed. If excised you must remember that the operation is not simply to cut it out, it will suppurate out. It must be excised entirely and in some large cysts it is necessary to pull the skin together so as to stick by the natural mucilaginous exudate or by stitching.

Derangement of Sweat Glands;

Hyperidrosis. Here we have the derangement of sweat functional glands, either from the (a) vasomotor or (b) secretomotor side, with an increased secretion of sweat in either case. In some cases the condition is congenital and even here dietary. More commonly it represents a functional disturbance or a sweat gland system, the condition is associated with a

- (a) Some organic disease;
- (b) Some general disturbance of the nervous system, e.g., what we call the neurotic condition; neurotism etc.
- (c) Secondary to chronic diseases of the heart and lungs, especially when the heart and lung conditions are vasomotor order, which is a functional disturbance due to vasomotor conditions elsewhere, e.g., functional hypertrophy of the heart, representing a functional condition and not an organic condition.

Hyperidrosis may be either acute or chronic and also local or general. In the acute and general types it is more likely to be associated with a nervous disturbance, in the chronic and local form it is associated with temperature, the after effect of pneumonia, rheumatism, Bright's Disease, malarial fever, cancer, i.e. toxic conditions, tuberculosis, in many cases of simple anemia or hemorrhages of a localized type. Aside from the general hyperidrosis that is secondary to these conditions mentioned we find two subtypes.

(a) Bromidrosis (fetid sweating). A functional disturbance of the sweat glands with excessive secretion and excretion, the latter having an offensive odor. The condition here may be either general or local and the odor will depend on the pre-existing condition which is the cause, e.g., the febrile type gives the ammonia odor, scurvy type the putrid odor, syphilitic type a saccharine odor, rheumatism and acid odor, jaundice and whooping cough a musky odor and hysteria a violet odor. In some cases this is caused by the indigestion of certain foods. In this case the type is apt to be local in connection with e.g. the axilla or hands or feet.

(b) Chromidrosis. Here we have what is called the colored sweat due to the mixture of sweat secretion with pigmentary substances. In this case it is nearly always localized, e.g., on face, arm or chest. This type is almost exclusively found in the female sex in connection with uterine disturbance of some kind. In some cases it is found more or less in general in the male or female sex due to disturbance of the large intestine, supposed to be due to the absorption of indican into the blood and then into the sweat system acting as an irritant. Under this head would also fall the bloody sweat, so called the color of the sweat being due to the condition of the blood.

II. Anhidrosis. Here we have a disturbance of the sweat secretion involving a decrease in the secretion. This is always a functional condition and may be found either local or general. When it is found it is strictly congenital or hereditary due to neurotic conditions that is, either hereditary neurcisis or some congenital impairment of the nervous system, e.g. it is a frequent accompanist of leprosy which is a neurotic condition. Sometimes anhidrosis is secondary to these febrile conditions, neuralgia. This is a reaction from the functional neurosis. Is found also very frequently in carcinoma and diabetes. Frequently found in carcinoma and is difficult to deal with, the sweat function seeming to be entirely suspended.

The lesions are the same as in hyperidrosis, e.g. upper dorsal, and it is a vasomotor condition representing a suspension of the blood circulation or functional

suspension of the cerebro-spinal nerve supply, either in force or fluid to the sweat glands.

III. Sudamina. (1) This is an inflammatory condition of the sweat glands resulting in the suspension of the sweat secretion and sometimes initi obstruction with the result that there is formed a whitish or pearlish vesicle about the size of a small milled seed, the primary cause is a disturbance in temperature apparatus, (2) Increased temperature acting on the sweat glands to suspend sweat excretion e.g., found secondary to some of the febrile diseases such as typhus, thphoid pyemia, (3) sometimes developed in cases of debility of the body by wearing too many cloths or clothing that is impervious to heat and exaporation process, e.g. silk garments, when they are not made in the net weave. A closely woven silk garment is practically imprevous to heat and sweat processes. Here we have:

1. The increase of the secretion of a condition of hyperidrosis.

2. The accumulation of the fluid of the sweat secretion, not alone, but generally in combination with other fluids, that is, the secretion accumulates not in the glands but between the layers of the epidermis. This epidermic imprisonment of the fluid causes the formation of small discrete vesicles.

3. The fluid coagulates and the solid part takes on other solid substances from the sebaceous excretion, the subcutaneous waste and the lymph, this gradually increasing in size until we have the typical miliary sudamina. In other words they are similar to gall stones and other solid formations in other parts of the body. These nodules are found principally on the face and neck. Sometimes they appear and disappear readily. In regard to its causa it is probably dual in its nature, that is, an imperfect functioning of the sweat glands accompanied by an imperfect functioning of the epidermal layer of the skin. The epidermal layer of the skin has an excretory function normally, in this case, on account of the neuratic condition of its nerve supply it does not discharge the excretory function and the result is an accumulatin among the layers of the substance which is not exactly waste substance for it is a part of the lubricating fluid of the layer itself.

IV. Hydrocystoma. Representing small deep-seated discrete vesicles due to the retention of the secretion from the sudoriferous glands, the vesicles being found in sacs which are filled with the fluid part rather than the solid part of the

secretion. This distinguishes hydrocystoma from sudamina, where the solid part of the secretion is retained. These appear principally on the face, generally around the nose or upper lip, axilla, sometimes on the temples. They represent a non-inflammatory accumulation of fluid containing a clear watery substance. It is due to some disturbance in the thermal fibres which are disturbed to the epidermal layer of the skin, it is a neurotic condition and is found in those who are principally confined in overheated and unventilated quarters. The vesicles are preceded by the hyperdilatation of the duct of the sweat glands, the cystic accumulation extending into the corium. Here the condition is probably a neurosis of the subepidermal layers of the skin associated with the vasomotor portion of the nervous system or the sensory side of the heat apparatus, that is, of the nerve supply of the heat apparatus or what we call the thermal fibres.

V. Hydronodule. This is a hard painless nodule growing quickly on the skin. The starting point is a hyperemic condition a minute local point in the epidermis becoming very red. This soon changes into (2) pustule, accumulating and gradually being (3) mixed with the blood and serum, forming a mixed mass of pus, water, blood, salts, etc. These substances are exudative and this is followed by incrustation. The starting point etiologically is in the subcutaneous tissues then extending into the corium and later into the epidermis. It represents a degenerative process starting in a subcutaneous toxemia. Here we have the most deep seated of all the conditions of skin diseases.

Treatment of the Conditions of the Sweat Apparatus.

Here we deal with a functional disturbance associated with some form of neurosis. Latter is in majority of cases hereditary, consequently we do not find any typical localized lesions. Most of the conditions are localized on the face, hands and feet. Lesions are found in the lower cervical and upper dorsal. The treatment is to be general. Specifically

1. Correction of lesions.
2. General treatment to establish superficial circulation bearing on condition of nervous system diet, etc.
3. Articulation of the spine in the general case from above down. There would be an exception to this in anhidrosis or hyperhidrosis of the feet. Here articulate upward.
4. Patient on face, give strong vibratory treatment on both sides of the spine from the sacro-occipital region up to and through the dorsal region. Follow this by strong frictional

treatment in the same direction the object being to re-use the functional coordination between the sympathetic ganglia and the communicating fibres that run to and from the spinal cord. It is a coordinating treatment from the nerve side and is always applied in neurotic conditions.

5. The supply of the sodium chlorid element in the food and if necessary in a common salt solution, meaning that along with the substance of the sweat system there is a deficiency even artificially. In the sebaceous condition, e.g., seborrhea, the potassium salt e.g. celery etc. are absent and may be supplied in vegetable form.

Cereals are rich in NaCl element.
Unpolished rice - Proteid and carbobydrate.
Polished rice - almost wholly proteid.
Peas and beans rich in NaCl.

Inflammatory conditions, Including Exudative Conditions Of Skin.

1. Urticaria or Hives. This is a mild inflammatory condition, developing generally suddenly in the form of nodules, disappearing as suddenly as they appear. Represent blood condition but little is known of etiology. In appearance they represent whitish or pinkish colored elevations, itching and burning due to the reflex irritation of the peripheral vaso-motor system. These are two types of hives --

1. External, and among these causes we have poisoning by mosquitoes, bedbugs, flea bites, bee stings, etc. also the sting of the poison nettle. The result of the poisoning is a sudden hyperemia on the surface of the skin or a too rapid circulation through the superficial capillaries. Among other causes we find excessive heat, either directly radiated or heat retained from heavy clothing. This condition of the skin is also developed among dye workers and that indicates not only an exciting cause for such workers are susceptible to heat and other external conditions.

2. Internal gastro-intestinal troubles, particularly of a dyspeptic or a toxemic order, due to use of over rich food, excessive drinking lack of variety of food, in some people there seems to be a susceptibility on account of which whenever the warm season comes there is the urticarial development.

3. Another type is the drug type, causes by quinine, arsenic, salicylic acid, eubens, potassium. Here the skin is attempting to throw off these poison elements, drugs, resulting in urticaria.

4. Another type is secondary to worms and the last type which follows in the wake of such exhausting diseases as small pox, scarlet fever during convalescence, and Bright's Disease. These are found particularly where the disease has not been thoroughly eliminated from the system.

Morbid Anatomy begins in an acute inflammation of the papillary layer followed by a congestive edema resulting in exudation, the cause of this is a spasmodic vaso-constriction of the deeper superficial blood vessels followed by a serous exudation, this taking place during the spasm and when the exudate is thrown out the skin is in a neurotic condition.

Symptomatology. Among the symptoms associated with urticaria we have the (1) feeling of languor followed by (2) congestion of the heart and headaches.

3. increased temperature, or some cases of high febrile temperature, 4. eruption. Always in this case associated with cerebral congestion and delirium, also coated tongue, indicating derangement of gastro intestinal area.

The eruption of hives appears as a whitish elevation, firm and elastic to touch. These elevations are round in shape tending to become reddish. In some cases we find these not only on the surface of the skin but in the mouth, pharynx, epiglottis and other structures of the throat. The internal type becomes bluish in color, that is one of the supposed evidences that is often produced by those writers who claim that they are venous.

An acute attack is generally associated with high febrile temperature, high colored and acid urinary conditions and the tendency to flushing of the face. There are quite a number of so called types of urticaria or types depending on the particular portions of the body where they are located, e.g., the figurative type assumes the form of figure 8. Of these there are two types;

1. The Papular Type. Appears in the form of small papules, bright red in color, in the center there is a whitish spot. This type is found in children and is generally called the childhood type.

2. Nodular Type. Here the tubercular form of the elevation appears. Sometimes it is called the Giant Urticaria, a large tubercle and a white spot, or spot. These are always located in the chest. There is a type of this that is found along the spine to which the name of shingles is given hard nodules appearing along both sides of the spine. We think this is an atrophic condition found in debilitated children, e.g., following an exhausting attack of measles, measles, whooping cough, then the energy of the patient is exhausted. Sometimes type called Pseudo shingles.

3. Hemorrhage urticaria. The only difference between this and the common type is that this is found in purpuric patients.

4. Intermittent type. This appears periodically, e.g., will appear every other day or so. Always associated with rheumatism or malaria. Is very much like another condition before mentioned, boils, which come with rheumatism from expression of neurotic side.

Treatment. Here we are dealing with superficial circulatory disturbance, secondary to some deep seated toxic condition from or of the visceral field. Here we have the pathological side of Head's disease. An internal visceral disturbance thrown off and showing itself on the surface of the skin, that is, we have here an abnormal excretory function of the skin. This should never be driven in. In some cases of intense itching it must be relieved, e.g., in shingles, but it is not to be driven in. Some simple thing, as alkalinized.

vasaline but not good, will relieve the itching. Another method is to use the slacked lime solution. Treatment;

1. Removal of the irritating cause producing the condition and you will find the typical lesions that are maintaining the gastro intestinal toxemia, etc.

2. Treat capillary congestion along with this treat the static condition of the superficial capillary system -

(a) Increase the general circulation and elimination;

(b) Treat the splanchnic system in order to get as nearly normal as possible a digestive action and keep the excess of blood in the abdominal field.

3. Diet. Look particularly for idiosyncrasies in the diet in the particular case. You will find a patient who has an abnormal saving for some article of diet, such as canned beans or salmon, if so, cut out that food absolutely, milk may come under the same head. Put the patient on some simple nutritive and easily digestive diet.

4. Supply patient freely with potassium salts dietetically using such foods as contain these salts, celery, etc.

5. Treat the surface of the skin - (1) By inhibition; (2) by simulation, in order to relieve the pressure produced by the congested condition of the blood in the capillaries and the serous exudation in the upper layer of the skin so as to remove the pressure from the minute nerve terminals in the skin. This treatment will relieve the itching and burning condition which is an irritation of the sensory nerve terminals in the skin and a softening of the skin locally will relieve the pressure first, then giving the moving pressure of vibration.

HERPES. Here we have an inflammatory condition of the skin consisting of the development of blisters or groups of blisters filled with a clear serous fluid. Most commonly found around the face or chest, sometimes extending to other portions of the skin. Is located on a reddened base which is thickened, is found principally as a second complication of an irritated condition of the skin and these irritations are probably always secondary to disturbances of the mucous membrane of the alimentary tract. In some cases it is congenital and associated with the mucous membrane of the urinary apparatus.

Among exciting causes we find, 1st cold frosty weather, etc. 2nd, shock to nervous system like or 3rd injury to the nervous system, 4th nervous or mental depression, 5th direct irritation introduced

into the system and coming in contact with the mucous membrane or the result of some febrile condition, intoxication principally malaria and typhoid fever.

Herbid anatomy representing a primary inflammation caused by an irritation of the sensory terminal in skin field, nerves, or irritation involving the sensory ganglia that are located on the posterior branches of the spinal nerves, 3. In the chronic condition these ganglia in centers are in an inflammatory condition. We also find herpes secondary to brain or nervous diseases.

There are a number of types of Herpes, the most common of which is called Herpes Zoster. Here we have the reticular portion of the skin involved, 4. Papillary enlargement, (b) dilatation of the superficial blood vessels and infiltration of the cell substance (c) extending down deeply into the corium. In all cases the nervous system is the primary seat of the inflammation. This explains the eruption which is the means of liberation of the fluid substances and it also explains some of the other symptoms we find, such as chilliness, which is a reaction of the nervous system to the localized nerve infiltration. Among other symptoms we find febrile temperature, severe headaches, constitutional symptoms, such as debility, loss of appetite, loss of flesh, etc. also pain, particularly associated with the febrile temperature, especially at the time when the temperature is marked. The febrile temperature is a hyperstimulation of the temperature fibres which are involved by the infiltration and the pain is a reaction from that.

2nd state. Herpes appear on the skin as a small vesicle ranging all the ways from the size of a pin to a pea. These vesicles are not numerous, but are arranged in groups or series. They are whitish or skin colored, tending to be shiny, the exudate in the vesicle causing pressure and dilatation of the skin. 3. Sometimes the serum will become pustular or purulent and in some cases it will break down and suppurate. In the average case it will dry up by the absorption without breaking and there will be a crust formation on the surface of the skin. In some cases there is the excoriation of the skin, due to friction, rubbing or scratching and later healing with scar tissue formation.

History.

Typical Herpes Zoster is an acute condition lasting about one week. Is very liable to relapse and run another period of 7-8 days, where there are constitutional symptoms or when patient is more or less debilitated. In those cases where a relapse

occurs there is a herpetic fever. In these cases the herpes vesicles are found typically on the internal mucous membrane in the mouth as well as skin.

This condition is found principally from puberty to maturity and is found more frequently in the male sex. Is found in those who are predisposed to scrofula, tuberculosis, gout and rheumatism. Other types are:-

Herpes Facialis or Labialis - Fever sores or blisters on the face or lips, also found in the mucous membrane in the mouth, particularly around the inner margin of the lips, found in some cases with pneumonia and simple colds. The one point that is always indicated in these cases is an irritation of the superficial nervous system.

Herpes Iritis, is found in connection with the iris of the eye. Begins in the form of a single vesicle in connection with the eye passing through the regular course.

Herpes found on the dorsum of hands and feet. These herpes blisters appear in ring form, sometimes like the ring worm. In many cases we find a series of concentric rings on the hands or feet, sometimes these blend together and form a confluent patch. This type is always itching and burning. Is associated particularly with gout and rheumatism and represents an elimination process and this is the explanation of the periodicity coming on once a week, the acid exciting the nerve terminals in the hands and feet. In some cases the herpes condition becomes in the form of little vesicles. Here we would look for some intestinal toxication.

Herpes Progenitalis. Is found most commonly in the male sex, in connection with the external genitals, but seldom found in the female sex. This does not represent a specific condition, but simply the edematous condition of the secretory system in connection with the genital organs. where there is also an itching and burning sensation, the same in the type on the hands and feet.

Another type is called the chaneroid herpes, the specific syphilitic herpes, secondary to syphilis. Always tend to the suppurative condition. Sometimes it is the means of throwing off the edematous condition of the chaneroid, this does not ulcerate. VIII type Another type is called the Herpes Gestationis, occasionally found in connection with the lower extremities of the female during pregnancy. Sometimes they come periodically at intervals of two or three weeks and in some cases will continue to appear periodically during the entire period of gestation. This indicates some type of disturbance of the pelvic circulation.

5th type. We also find a type of herpes associated with the scalp. This is caused chiefly in children, particularly in rickety, tubercular or syphilitic children. The entire scalp may be covered with the herpes and in such cases it is the toxic condition of the constitutional system throwing itself off on the surface and elimination in this way may result death. In such a case only drainage at each point will be beneficial.

Herpes Zoster, the most typical of the types of herpes, where we have an acute inflammatory condition in which the vesicles are in groups. It is sometimes called "Zona" because these herpes are found in zones or segments. The distended vesicles are always located on an inflamed base, this corresponding with the path of the nerve trunk. Most frequently we find it in connection with the cranial nerves. The inflammation follows an intense heat and with the inflammation there is burning pain, extending to the nerve path or the nerve ganglion, probably representing a neurosis. The skin condition is an atrophic disturbance and this means that the nerve fibres which are involved are the trophic fibres. Note one point that you can produce herpes zoster by feeding small doses of arsenic, poisoning the system to that extent. 1. Such an arsenical herpes appears not only on the skin but on the mucous membrane. In the chronic condition there is an inclination of the trunk of the nerve and also of the nerve ganglion resulting in the vesicle formation, even within the nervous system. The vesicles on the skin are developed in connection with the reticular portion of the skin, the vesicles being sacs of serous fluid exuded from the nerves. This is one of the evidences that not only is the blood system a carrier of fluid but also the nervous system is a carrier of the fluid.

The attack comes on always with neuralgic pains which are due to infiltration of the nerve causing pressure. Sometimes there is a lightning pain almost like locomotor ataxia. The difference however, between herpes and locomotor ataxia is;

1. You get the vesicles developed with the lightning pains in herpes and not in locomotor ataxia;

2. There is always febrile temperature in herpes; not often found in tabes D.

3. The papule and vesicle formation takes place along the path of the nerve involved and the form of its appearance is the very red base followed by the opening above, the base filled with serous fluid and is always an infallible symptom that the case is herpes. Sometimes we find the vesicles in crops, sometimes one following another in about two weeks, Each vesicle is well formed, bright red

colored at the base and in a few days becomes entirely opaque, gradually becoming yellowish brown then the vesicle falls off, leaving the skin normal, except for a slight pigmentation and erythema. In some severe cases the patient has severe spasms and these are to be considered in the nature of a mild tetanism, the intoxication of the nerve of the muscle causing spasm. Nearly always bilateral. Appears on the two sides of the nerve trunk, on two sides of the spine, or two sides of the chest.

Malaria - Prickly heat. Acute inflammation of the sweat glands affecting a large number of these glands. Starts with formation of large number of papules with prickling or burning sensation. The starting point is exposure to intense heat, sometimes it is caused from wearing too heavy clothing, not from the weight, but from the current of heat kept in close contact to the skin. This condition is found principally in children and grown up people in nervous conditions, e.g. nervous debility.

Two types of it are;- (1) Papillary, (2) Vesicular, Both are associated with inflammatory processes. Starting point is hyperemia of sweat glands followed by a great accumulation of sweat in the glands. 1. This in turn is followed by 2. exudation of secretory substance into the ducts and tissues surrounding resulting in papules or vesicles, 3. The papule formation represents the prickly heat condition. This type comes on suddenly first sign being the presence of small red spots right over the orifices of the sweat glands, then slight elevation of the surface. These points remain discrete without coalescing. They are found chiefly on the neck, chest, arms back and head.

The Vesicular Type represents the development of a large number of vesicles of a bright red color each vesicle being surrounded by a portion of discolored skin. The vesicle is produced by the excessive sweat secretion and whenever the patient perspires freely there is the reappearance along with a burning and tingling sensation. This generally lasts for a few days, sometimes periodically for a few weeks and when it goes away leaves a desquamation condition. The cause of these conditions is undoubtedly a toxic elimination through the sweat system, the intoxicated sweat acting on the skin surface as an irritant and in the vesiculist type destroying that portion of the epidermal substance into which exudation took place.

Pemphigus. Here we have an inflammatory condition of the skin found either in the acute or chronic form, in which we find a succession of small irregularly shaped round blebs or blisters varying in size from a pin to a pea, and sometimes as large as an egg. These are filled with a yellowish substance and they come out in

connection with a low state of vitality and represent a debilitated condition of the nervous system, e.g., they are found principally in the female sex in connection with some type of menstrual disturbance or during pregnancy in those cases where you have a low or debilitated condition or vitality, e.g., in scrofula, tubercular conditions, etc. male sex as well as female, countless hereditary in a child, in which case it is difficult to tell whether it is hereditary or congenital and therefore we may call it both hereditary and congenital.

Fluid that is found alkaline in reaction and becomes more so as the condition develops. In some rare cases the fluid is blood. You have the debilitated blood exuded into the small blebs in an attempt at an elimination process. The most common type is called Pemphigus Vulgaris.

The onset is slow and without any marked symptoms. In some cases it comes on suddenly with febrile temperature, the bleb development taking place in crops, lagging all the way from three to ten days. When you have these blebs, blisters, herpes, etc., it is an index of low vitality of the skin in reaction to the low vitality of the nervous system.

Pemphigus Malignus. This is a malignant type with such large blebs, generally found in large numbers over the body first smaller in size then coalescing to form a large one, then the condition passes along with the destructive condition of the epidermal tissues sometimes scar tissue formation. This comes close to death of the particular portion of the skin where the elimination has been. It is an abnormal physiological process by the nervous system which is attempting to throw off the toxic substance. We think all the eruptive conditions are physiological.

Soft or Flaccid Type. These are filled with a fluid which very generally causes a rupture of the elevated epidermis on account of its softness and this leaves an uncovered surface. If there is no poison there is but little trouble, the condition soon healing and passing away.

V. Impetigo. Here the acute inflammation is found in the form of small rounded pustules, discrete generally about the size of a small pea. Is always associated with great itching. It is a rare condition and is found chiefly in children - 1. Those who are badly nourished, fed on poor food; 2. Associated with gastro intestinal disturbances. Here we have a really elimination process throwing off the toxic elements in connection with gastro intestinal toxemia; (3) Sometimes secondary to debilitating or wasting diseases. We find this in adults, e.g., in chronic

tuberculosis of long continued standing. Also found in cancerous conditions, especially those running through a protracted period, slowly developing. The inflammatory condition is superficial, at first it is found in the corium, involving the papillary layers, the centers of elimination developing sub-epithelial pustules. The development of the pustules is rather sudden. It seems that the poisonous matter is thrown out into the subcutaneous tissue in an attempt to eliminate through the lymphatic system, but for some reason the lymphatic system seems to be unable to eliminate and the pustules form. The fluid is a seruzinized substance containing pus, some blood corpuscles and sometimes other elements, like salts, different forms of poisonous proteid. The cause of the condition is that the proximate food elements are so poisoned when they enter the absorbent system that the tissue refuse to assimilate and that poison may be due as before mentioned. In some cases the appearance of these pustules is preceded by mild febrile temperature and also an eruption. The pustules are located on an inflamed base, the entire epidermal and chorium substance having areolar discoloration which surrounds a particular point and which is the pigment from the blood. The pustules are isolated but do not tend to coalesce and do not tend to rupture unless in very severe cases. The contents of the pustules are usually absorbed after running through an acute course of ten days or two weeks. Most commonly found on feet, hands and face.

A contagious type comes on with febrile temperature. At first the pustules are very small, gradually increase in size forming small belbs on the surface of the epidermis. In a few days they dry up and crustation takes place and it is during the shedding of this crust that infection takes place. This type is found on the face, hands, and arms, sometimes it involves the glances. In this case the pustules are different in form instead of being rounded they are flattened. Some writers claim that parasites are found in the fluid but if so it must be secondary to the pustules.

Ecthyma. This is an inflammatory infectious condition with the formation of one or more discrete pustules flattened on the top and resting on a flattened base, followed in the process of regeneration by scarification process. The reason for this is that ecthyma is primarily a connective tissue formation or condition, is commonly found among the badly nourished, especially where conditions of oxygenation and ventilation is abnormal.

Sometimes it is found in cases where excessive activity produces an over exhaustion of the nervous system, e.g., among factory girls, also found sometimes in connection with typhoid fever, when the typhoid development depletes the system leaving it in an exhausted condition. Then we have encrustation of the pustule into the papillary layer of the orium. The pustules are located on every hard and highly inflamed base, the hardening indicating infiltration. 2. The acute type is associated with an eruption which is preceded by;

1. Mild febrile temperature;
2. Localized heat at the point where the pustule shows itself;
3. Burning and itching sensation locally followed by,
4. The formation of elevated reddish spots on the skin surface; when

5. The base of the pustule becomes hard (both surface and pulp) we find a well marked areola around the pustulation. This condition lasts for a few days and then is followed by the rupture of the pustule and the formation of a thickened scab followed by excretion and keep an open surface for some weeks later. This is due to the toxin and here some antiseptic fluid must be used in order to prevent the spreading of the toxin.

Chronic Type of Erythema. Here we have an irritation supposed to be parasitic in its nature, associated with cases of traumatism of the skin, also found sometimes on the mucous membrane surface, particularly in those who have low vitality, or in gastro-intestinal toxemias. Another type classified under the same head is the ;

Furuncle or Boil. Here there is an acute affection of the surface area of the skin, because it is circumscribed in its subcutaneous origin. In circumscribed subcutaneous abscess two things can take place;

- (1) The abscess can remain local and pass up to the surface;
- (2) Instead of remaining in a purely circumscribed field the suppurative matter may become diffused and if so you have the starting point of localized erysipelas, i.e. Erysipelatous Phlegmon and the phlegmasous condition associated with that.

Following the attempt to elimination of abscess matter upward from the subcutaneous structures there is anecrotic process,

- (a) which is on the surface;
- (b) Extends to the subcutaneous structures;
- (c) This suppurative matter is expelled

through the cutaneous structures in the form of pus. It may be walled in for some time by the epidermis and this case forms a typical boil. Afterwards the pus forms or causes rupture or has to be surgically ruptured and then we have the resulting scar tissue formation.

The cause locally is a lowered condition of vitality. May also be secondary to traumatism, rheumatic toxin or the circulation in the subcutaneous structure causing degeneration and death of these tissues and here is another distinction between boil and carbuncle. In the boil we have the circulation of the toxin in the deep layer of the skin, resulting in death of surface tissue structure. In the carbuncle it is not in the skin at all, the origin being in the adipose tissue, called the panniculus adiposus. It gravitates out to the surface in the adipose channels, lymphatic channels, from the adipose tissue to the sebaceous glands or to the hair follicles. You want to pay particular attention to boils in rheumatism.

Boils are associated with improper dietary, the dietetic elements furnished to the nervous system being improper for nerve nutrition and if the nervous system is in a bad state of nutrition, it is clear that condition will be so. We also find a type of boils associated with functional derangement of the system, all of the waste elements in this case being thrown out into the skin. This waste element causes a localized irritation. The reason why boils are so frequent on the neck is on account of the irritation through movement of the neck, or the height of collars, etc.

The real physiological cause of the boil is an embolic condition of the papillary circulation. Sometimes an obstructed condition of the glands, obstructing the free discharge of lymphatic fluid, reacting on the blood supply, producing stasis and setting up an inflammatory process. This in the last case when the glands are involved, there is an infiltration in connection with the sebaceous and sweat glands and of the hair follicles. This is the closest point of resemblance of boil to carbuncle.

The typical boil begins as a small round spot slightly elevated above the surface of the skin. This elevation represents purulent matter and below this there is a necrotic process. A boil is really a small gangrene, pathologically. The course of the boil is generally about one week, but may have a series going on for a number of weeks.

Treating of condition described under herpes.

1. Attend to the circulation particularly

coordinating the deep and superficial circulation

(a) 4-5 Dorsal

(b) Local to skin

2. Attend to the glandular system, stimulate the glands thoroughly so as to secure normal gland action.

3. Strong stimulating treatment by articulation along the spine to coordinate the sympathetics with the cerebro-spinal nerves.

4. Stimulation of the lymphatic and venous circulations by drainage.

5. Vibration around the localized base of the vesicle or pustle.

6. Supply dietetically the NaCl \times elements which are deficient in the skin and system in general.

Furnish in organic form: apples, greens.

In Herpes Zoster also following:-

7. Particular attention to nerves as this is condition of nerves neuraxema that are concerned in the digestive processes and intestinal activity, particularly the tenth cranial nerve and splanchnics.

In Miliaria, Pemphigus and Impetigo the same treatment as in herpes and in addition:-

8. Give the patient cod liver oil and if unable to take per stomach, use hyperthermia injection method using the same as you would a normal salt, injecting about the lower angle of the scapula in the cellular tissue or rub it in, as this condition develops in the Adipose field.

9. Use the bandage compression to overcome the hyperemia condition at the localized point where these conditions are found.

10. When the condition persists, saturate the compress with boracic acid and keep well saturated while the compress is on.

11. Keep the excretory systems open, e.g., skin urinary, fecal, pulmonary, channels.

12. In miliaria it is sufficient to substitute light for heavy clothing, using frequent applications of cold water locally, at area of disturbance. In obstinate cases keep the intestines open, even to the point of diarrhea, excluding from the diet all meats and condiments and giving acidulated water drink and if there is intense itching use acidulated water on the surface of the skin. Note that in the application of cold water or acidulated water do not dry by friction but by mopping.

13. In Pemphigus attend to the hygiene of the patient, giving rest to overcome exhausting conditions and remove all exciting factors from the surroundings. Give a nutritious diet and one easily digested in the particular case. Look out for functional derangements from the gastro-intestinal apparatus. If a low state of vitality exists give a tonic treatment and also use cod liver oil eliminating all

alcoholic elements. In febrile temperature conditions treat to relieve the temperature by radiation or evaporation. In case it is necessary to resort to surgery use a simple puncture and treat the localized conditions to keep down the irritations. Keep the surface of the skin dry and use a dusting powder. If there is an inflammatory condition use warm or tepid bath, or a tar soap bath using the soap in solution Dry by mopping not friction, and then dust the part with powder.

14. In impetigo keep the patient as clean as possible. Give plenty of fresh air. Build up the constitution and give moderate exercise as a tonic to the nervous system. Remove crusts from the surface of the skin, using a mild boracic acid solution and irrigating with a cold water spray.

15. In Ecthyma. Use local vibration around the pustules, beginning at a distance from the pustule and moving upward until you can vibrate over the pustule using a single finger over another finger. Give general treatment and keep the circulation active. Keep this double treatment up every day if possible. Sulphur baths or witch hazel and boracic acid solution are also recommended.

16. In Boils and Furuncles attend to the patient's diet particularly, excluding all salted, corned or preserved meats, also all kinds of fish and such stimulants as tea, coffee, alcohol, also cheese. Pay special attention to the intestinal field. In the average cases when the boil is taken in time it can be aborted by the application of a compress, usually by using some solid substance and adhesive strips to hold it on. Some take a thin slice of soap, laying it on the top, the skin absorbing more or less of the soap, which is antiseptic, and held together by the adhesive strips. If a localized inflammation is present do not use this method, but use the carbolic spray to dissipate the inflamed condition and then apply the compress. When suppuration is present, must be treated surgically.

VIII. In Caruncles we have (1) tension, involving the structure both on the surface and of the deeper skin structures. The dark red color of the carbuncle indicates the deep seated (2) inflammatory condition involving the cutaneous and subcutaneous tissues, particularly the connective tissues. This gives rise to the death of the tissue with resultant (3) sloughing and later scar tissue formation. It originates in the deep seated structures of the adipose tissue, found in those who are debilitated, of low vitality, particularly at the middle period of life and is more frequent in the male than in the female. ~~xxxxx~~ Frequently found in secondary to diabetes rheumatism, gout, albuminuria and is found ~~xxxx~~ more particularly in the summer and dry weather than in the

moist and winter weather.

Morbid Anatomy originates in the sub cutaneous adipose tissue, small canals leading from the adipose tissue outward toward the roots of the hairs and the glands in connection with those hairs. I. Abscess formation and the diffusing of the suppurative substance takes place in this adipose tissue. The diffusion of suppuration is not found in carbuncle but is found in the phlegmonous type of erysipelas. (4) In the carbuncle the subcutaneous inflammation results in exudation and infiltration, the matter infiltrated being pressed upward through the small canals reaching from the adipose tissue to the skin surface in connection with the roots of the hair. (5) The infiltration causes pressure, destroying the superficial circulation, resulting in the death of the tissue. The reason why carbuncles are found in the neck is due to the density of the fibrous band of the skin that extends down to the adipose tissue so that when the circulation is obstructed the purulent matter tends to get out to the surface and nature tries to prevent it from doing damage by walling it in and this is the reason why you get the capsule around the carbuncle core which represents the center of a localized gangrene process.

Carbuncle is practically always secondary to some constitutional disease or disturbance, hence we find symptoms as headaches, chills, febrile temperature, followed by the localization of the condition in connection with pain, swelling, redness of the skin at the localized point, dull pain becoming throbbing and burning. This localized pain begins in the under layers representing the beginning of the phlegmonous process. The shape of the carbuncle is the first rounded, then it tends to become vesicular, later it becomes elevated and becomes firm as it is filled up with the gangrenous substance.

This then is the typical gangrenous process that takes place, or the abscess dies, collecting in the walled off area that nature marks on the field, so that the condition is limited.

Treatment of Carbuncle. We are dealing with a localized condition very similar to oethyma and which is to be treated in the same way —

1. Manipulate carefully around the local area of the carbuncle, moving the muscles in all directions to free the circulation, moving the carbuncle itself gently from side to side.

2. Give strong extension to the neck and rotate the head freely, articulating all the cervical vertebrae downward, the object is to stimulate the

circulation as much as possible to set up a hyperemia.

3. Vibration around the carbuncle, first at a distance and lastly over the carbuncle.

4. If it is located in the lower cervical region give strong extension to spine as well as the neck.

5. If the carbuncle is broken down with an accumulation of dead substance in the field, and if there is abrasion of the skin, apply locally a carbolic acid solution to help to stop the degenerative process. See that through circulatory and vibratory treatment is given.

6. Attend to the hygienic condition of the patient, giving freely the hot fomentation around the carbuncle and neck from time to time. See that the patient has a nutritive diet to build up the constitution same to be of a light nitrogenous diet, e.g., chicken, eggs, meat broth, cereals, vegetables, juices, etc.

7. In cases of nervous depression often accompanying carbuncle conditions, diet the nervous system and at the same time give vigorous stimulation to the nervous system.

8. When the carbuncle has gone beyond the stage of absorption, indicated by what is generally spoken of as "pointing", surgical incision is called for, drain and wash with carbolic acid.

ACNE. Here we have an inflammatory condition usually chronic involving the sebaceous glands, associated with the development of a papular pustular or tubercular condition, or all in combination. In a typical type we find all of these in different stages of development. It is localized chiefly on the face and more particularly on the cheek; sometimes on the neck. Found in both sexes.

Cause is some reflex irritation, either local or constitutional, found particularly at periodic changes of life, Puberty,

1. The starting point of the local condition is a hyperemia of the blood circulation in connection with the sebaceous glands, which results in an active congestion followed by retention of sebaceous secretions, the inflammation being secondary to constitutional disturbances, periodic changes, or a gastrointestinal disturbance. Also frequently found as a surface expression of the lymphatic or scrofulous or strumous diathesis, found at puberty and those who are developing chronic anemia or those who have had from childhood digestive derangement. In adults due to excessive use of cheese.

Morbid Anatomy represents the inflammation of the sebaceous glands, retention of secretion,

followed by exudation of secretion substance in the neighborhood of the gland, which results in the infiltration of the connective tissue (2) followed by suppurative changes. If the inflammation is very severe then the connective tissue of the sebaceous glands sometimes become destroyed or obliterated.

It is most common of all skin diseases, found either alone or in combination with some form of seborrhea. The first appearance is in the form of papules, either isolated or in patches. Found on the forehead, cheek and chin. It is always sympathetic in distribution. There are two types that are common;

(1) Acne Papulosa. This represents the first stage of inflammation. Here we find small pin head papules around the sebaceous glands, the body of the papule being light colored and the center dark. The dark point is the opening in connection with the sebaceous duct. At this stage there are no symptoms except the papular appearance.

(2) Acne Pustulosa;- This is very freely developed condition in which there is a typical infiltration. The pustular base is red and the inflammation is marked by the heat. No pain and no constitutional symptoms in the general case, the pustules forming quickly and are as quickly absorbed, in which case the pustulation is limited to the surface layer. If the inflammation becomes subcutaneous then we have hardening and induration, this extending downward. This may go on until there is either hypertrophy or atrophy resulting, enlarging until we have the nodular form or until the structure around the gland atrophies. This type sometimes results from the use of drugs, bromides, etc. A similar condition is found in connection with collaloid used in a hat band or collar.

Acne Rosacea. Here there is a chronic type of inflammation, affecting particularly the nose and cheeks. In this case there is a hypertrophy following hyperemia. A permanent dilatation of the blood vessels takes place and enlargement of the subcutaneous tissue, found particularly where the constitutional system is weak, also in weak condition of the stomach and liver. The exciting cause is the excessive use of alcohol or other stimulation.

Morbid Anatomy;-

- (1) Blood stasis localized;
- (2) Blood vessel dilatation;
- (3) Hypertrophy of tissue around the blood vessels;
- (4) Inflammation of the sebaceous glands; Inflammatory process mostly lost.

(5) This may go on to pustulation, in which case the connective tissue is involved and breaks down and degenerates;

(6) Following this there is a proliferation of lymphoid or connective tissue and this causes the enlargement of the skin and subcutaneous tissue in involved field.

This is to be differentiated from the nodules of syphilis and cypus conditions principally by the microscopical examination of the blood. It is from no intoxication or para formation.

Treatment of anca. Here is a condition of the sluggish action of the capillary system, resulting in a (b) static condition of the capillary circulation followed by chemical changes in the static blood, these chemical changes throwing out certain and or by products onto the surface of the skin, which causes irritation. In some cases these end products are absorbed by the nerve terminals resulting in paresis or paralysis.

1. Regulate the general circulation. Stimulation.
2. Remove all the pressure from the arteries and capillaries especially, carefully manipulate the sebaceous glands in order to get free visceral action of these glands and use measures to remove any local heat or inflammation, radiate, evaporate or inhibit over the area itself, as the heat acts as an irritant to the sebaceous glands and aggravates the pressure which keeps the arterial and capillary blood in a static condition.
3. Stimulate the salivary secretion, the seventh nerve, the parotid gland and give internal stimulation in the mouth, also pay attention to the digestive functions, particularly in relation to the normal blood flow to and from the digestive apparatus.
4. Stimulate the sympathetic system so as to get action on the blood system through the vasomotor field.
5. Look out for constitutional conditions particularly in anca for constipation.
6. Remove all irritation that may be found in the genito urinary system, vesicular or osseous in the spinal field of the genito urinary organs. Have patient use freely the natural mineral waters which are used specifically to reach the eliminativetracts of the genito urinary organs.
7. Attend to the hygienic conditions, more particularly to the frequent use of the cold sponge bath; moderate exercises in the open air and all the sunlight possible.
8. See that patient gets proper food,

particularly a free supply of nitrogenous food avoiding all indigestibles, pastries, etc. The free use of alkaline solutions in connection with the skin, the potash bath or soap, the potash extracted from the woody ash is good, especially where the skin is thickened, to be used twice a week and the patient to remain in the bath for some time.

9. When the gangrenous condition develops locally we are dealing with an anemic condition to be treated from the anemic side. This calls for some type of oil, cod liver, olive oil, either internally or externally. The rheumatic and gouty patients are to be treated from the same standpoint as the rheumatism or gout themselves, as it is but an expression of these diseases.

Chancroid. Here we have a localized contagious venereal disease in connection with which we find the development of peculiar ulcerative condition involving the cutaneous or mucous surfaces, or both. Always preceded or accompanied by inflammation, the inflammatory process in this case starting in the lymphatic system and without any constitutional symptoms associated with the typical blood or constitutional diseases.

Exciting cause is infection or contagion, the medium or exciting cause being the syphilitic (fluid) virus. Toxic rather than the germ disease.

Morbid anatomy is similar to that of any other toxic purulent condition. Foundation of ulcer located deep in the corium and in the papillae. On this foundation we find masses of the toxic laden pus cells. The papillary and rete layers become oedematous and following oedema is infiltration. Underlying this foundation the corium becomes thickened and ultimately infiltrated up to the point of induration. The beginning of the localized condition is vaso dilation, the minute blood vessels being exceedingly dilated. The next stage is the swelling of the blood vessel walls, the surrounding tissue becomes infiltrated. The fields of infection are the fingers, hands and genital organs.

The morbid processes proper begin in hyperemia. The result of the established hyperemia is an absorption of large quantities of the virus into the hyperemic field. This aggravates the localized inflammatory condition so that we find a small point exceedingly red, gradually increasing in size during the 24 or 36 hours until there is a well marked area of intense inflammation, all the blood vessels at the point of inoculation becoming enlarged. It is at this stage that we have the vesicle formation. These gradually change towards the pustular stage when through the increased development of intoxicated

pus the ball spontaneously break in the formation of the typical ulcer. Sometimes several days elapse between infection and development of the localized hyperemia. This is due to the fact that in this case there is no abrasion of the skin, consequently there requires to be an erosion process.

The reason for this is that the infective process always attacks the lymphatic system first and not the blood system. The blood has power to carry infection, but if it has power to destroy infection, perhaps no infection might get to the lymphatics. The ulcer itself is a well-developed round or oval vessel with ragged or abrupt edges and a red base and covered with a red or yellow pus accumulation. The ulceration process gradually increasing, there being well marked period of incubation. In some cases the toxic condition extends in all directions, in which case it becomes chronic and here it may assume the discrete or multiple type.

In the chronic condition there is a great swelling and enlargement. Among the complications found, the most common being the bubo, discussed elsewhere. In all cases there is a general disturbance of the lymphatic system, sometimes involving the glands, particularly in this case the glands become enlarged with a typical inflammation which may extend over the entire lymphatic gland system. In some cases this results in lymphatic suppuration. In some very mild forms of chaneroid there is no complication but a simple lymphatic intoxication and a localized pus formation and spontaneously passing away in which cases the blood is strong enough to overcome the virus.

Chaneroid is a form showing an inability of the system to throw off completely syphilitic condition. Therefore to treat for the underlying syphilitic predisposition we must treat for syphilitic conditions generally.

(1) Attend thoroughly to cleansing the chaneroid condition locally so as to remove any poisons that may be associated with the localized condition. This may be done by the use of any antiseptic or antitoxic substance.

(2) If the chaneroid has developed it may be necessary to use the cautery method. Electric cautery removes without hemorrhage and gives a minimum of cicatrization and pain. Direct cauterization is preferable to acids, because the acid tends to be diffused and where there is a deep diffusion of acid it may cause other results. Another method is scraping out with a superficial scraping machine removing the excess of abnormal tissue and afterwards treating the case as an ulcer.

3. In case of bubo development attend to the glandular system also lymphatics, if the swelling continues the local use of ice pack may be used. If suppuration takes place then the tube will require to be evacuated and the pus eliminated. In severe cases cauterization is required to be applied, every vestige of the dying or dead matter to be gotten out.

4. Attend to diet and hygiene of patient, non-irritating food to be used, Patient must not overeat. The frequent douching in alternate hot and cold baths is a valuable feature. Abstemious diet.

Erythema. Inflammation supposed to be produced by poisons or germs. May be found on surface. Found in small children, as in changes of seasons; in adults found secondary to rheumatism, gout, malaria, also in the female sex as a post parturition complication. Sometimes secondary to uterine or bladder disturbances. Starting point is in vaso dilator system, producing dilatation in the capillaries of the corium, a result and exudation of the serum into the surrounding tissues, sometimes followed by an extravasation of blood into symptoms of constipatory disturbances, such as headaches, gastric disturbances, pain in the joints, inflammation of the throat. Generally starts with a sudden rise in temperature followed by the eruption, consisting of enlarged papules or tubercles. These begin in very small rosy spots, rapidly increasing in size until the whole surface is covered and assumes the form of erythematous patch. Papules are rounded or oval in shape and are always red in color indicating localized vaso dilatation and inflammation. It lasts from five to six days and is found principally in the extremities. May appear in series of 5-8 day periods.

Another type of erythema is called Erythema Nodosum. Found in children or adults of rheumatic or gouty condition or in people who live in very damp houses. Here is the same starting point of vaso dilatation resulting in the corium and connective tissue dilatation, exudation of serum, infiltration of fluid in the connective tissue. The lymph vessels become swollen and the corpuscles migrate out of the lymph vessels into the surrounding tissue. This is usually preceded by a slight febrile symptom, secondary to gastric disturbance, pain around the joints, sometimes sore throat, particularly tonsillitis, associated with the rheumatic conditions.

Eruption consists of nodules in the corium, and

subcutaneous tissue. This type differs from the erythema simplex or multiple type, in the fact that the simplex is simply the dilatation of the capillary structure of the skin, whereas the nodosum type has the formation of new nodules in the corium and subcutaneous tissue. This type also differs from the other in the fact that it originates from the lymphatic side. These nodules may be found anywhere in the body, usually on the lower extremities and forearm. They frequently come in a succession of crops. Are accompanied by itching and some febrile temperature. The course of these is about three to six days and the nodule becomes extremely hard and then gradually softens it disappears.

Treatment of Erythema. It is an expression of some other previous condition, consequently that condition is to be treated first. The main points are:

(a) Keep the bowels moving freely even to the point of painless diarrhea and if it develops do not check;

(b) Use such precautions as are necessary from a diatetic standpoint to prevent indigestion;

(c) Use no local applications unless necessary ~~xxxx~~ to allay itching. Keep the surface warm and if necessary use a dusting powder starch. When surface of the skin is washed use a warm water and soap and dry softly without friction. Itching can be greatly relieved by warm water.

The nodosum type. (d) If the febrile temperature develops which is typical keep the patient in bed and treat as in a case of mild fever, both from the osteopathic and diatetic standpoints (e) As soon as the febrile is under control, have patient exercise in the open air, (f) diet patient freely on simple nutritive diet, largely fruit, looking out for anemia and leukemia particularly. Stimulate the digestive apparatus of the patient to keep the patient up at a maximum of vitality.

XII. E I C H E N. There are two types of this condition, one the planus type. Here there is chronic inflammatory condition showing itself in the appearance of small rounded papules, these later becoming flattened. The papules passing through a chronic course in which the principle characteristic is the pigmentation process. Found chiefly in the female sex and is associated with anemia or constitutional weakness, also those who have nervous debility of some kind. These small papules appear symmetrically on the surface

of the skin and are about the size of a mustard seed. When they appear on the surface of the skin there is an intense itching and tendency to scratch and secondarily followed by a raw skin surface representing a patch of raw surface. Found chiefly on forearms and foreleg. The development of these papules takes several days and when the full development has taken place the pigmentation follows.

Later there is a desquamation process following. When the patch is formed as a result of scratching we have a scar tissue formation.

Lichen Scrofulosis. This is also a chronic inflammatory process marked by infection and found in those of scrofulous diathesis. The condition itself represents the formation of a large number of minute papules situated right over and in the neighborhood of a hair follicle. Found more commonly in the male sex. May be said to be a skin condition or expression of scrofula or tuberculosis. In the first appearance of the lichen we find a number of papules varying in color from red to yellow, slightly elevated above the surface of the skin and very hard to the touch. Found principally on the face, neck and extremities, the distinctly scrofulous type almost exclusively on the neck following the glands. Bear in mind here that there are two types, one associated with scrofulous conditions and the other in some more active type of tuberculosis. The papules are found at first discrete, generally in groups in the form of a cone with the apex upward, then apex of the conical papule being covered over with a whitish scale, a kind of exudate thrown out onto the top of the papule. There the flattened surface prevents the exudation of matter, whereas the conical point of the secretion allows exudation and the whitish scales become pigmented in the latter stage and the method of its disappearance is to scale off. When the scales come off it is flat on the outer surface with a rounded nodule on the under side of the scale representing the type of the apex of the papule.

Treatment of Lichen. We are dealing with a disturbed condition of the papillary layer of the skin and also with a disturbance of the lymphatic circulation. Treatment therefore:-

(I) Stimulation of the lymphatic circulation in general and of the lymphatic circulation through the fascia and subcutaneous tissue locally, localized inhibition and pressure over the skin.

(2) Stimulation of the sweat system so as to produce thorough elimination from the surface of the skin;

(3) Patient should have a nutritious diet of easily digested food with as little waste as possible, fruit in abundance and drinking freely of water; predigested food.

(4) See that the digestive apparatus is kept in working order and have patient take open air exercise; Treat viscera motor, i.g. sympathetic.

(5) Tone up the nervous system of patient, to assist have patient use some kind of oil as a food.

(6) Have patient use cold douches freely particularly over the parts involved.

(7) In the scrofulous type have patient use salt water freely in bath and use salt to some extent in drinking water. The system needs salt because in all tubercular and scrofulous subjects it keep up the isotonicity of the blood, the tendency being away from blood and lymph in these diseases.

Ca & Na salts stimulate tissue characteristic
 XIII. P R U R I G O. Chronic inflammatory condition of skin in which we find the formation of small solid pale or reddish papules. Papules differ from lichen papules in that in the latter are superficial in connection with the skin, while the former are deep seated. Former also extend above the surface of the skin by elimination involving both the epidermic and the corium. We have thickening and hardening of papule followed by pigmentation and associated with intense itching. Found in children and anemic subjects. Some call this apapule being filled with serum salts and representing an accumulation resulting from hypersecretion. Begins underneath the skin and expands outward Found chiefly in lower limbs and gluteal region.

Treatment of Prurigo. This is a lymphatic condition similar to the lichen type but more deeply seated and represents a constitutional condition of the lymphatic system. All the lesions are found in the lymphatic areas and should be corrected. Also

(1) Constitutional treatment in relation to the lymphatic system:

(2) Use oil in some form, particularly cod liver oil; locally without friction.

(3) A soap solution bath frequently, particularly the sulphur soap, or a naphthol soap and rinse.

(4) Manipulate the skin locally by inhibition and light kneading, etc. Here the real trouble is co-ordination between the epidermis and subcutaneous layers or corium layers of the skin and needs a thorough circulation of the blood.

(5) Diet, same as in lichen.

H Y P E R O A. A localized excess of heat. An acute or chronic inflammation, representing a vesicular erythematous condition, found in the form of erythematous circular patches with a large number of vesicles in the patch, indicating that it is a toxic condition. Some types are found in little blisters. These represent an excessive exudation of a very hot fluid, a local excessive heat going out with fluid similar to scald, the intense itching indicating a toxic condition always associated either with a neuritic condition or a mental condition, and in some cases associated with malaria and in others insanity, etc. is secondary to pernicious anemia. The localized condition is:

(1) An intense reflex irritation of the minute peripheral nerves.

(2) Resultant dilatation of the capillaries of the corium;

(3) Exudation of serum and infiltration with this serum of the papillary layers of the skin. Etiology. The exciting cause is gastro-intestinal toxemia, always gastric disturbance back of which lies general debility, either of the neurotic or mental type. Appears at first as small red spots rapidly increasing in size until there is a typical group of vesicles. Found principally in the lower extremities and face. Sometimes the vesicles disappear by resorption and sometimes the fluid coagulates and crusts and here it will disappear by desquamation. Sometimes there is a confluence of the whole group of vesicles forming a large scale and coming off by crustation.

Treatment. Here we have a constitutional condition that represents neurosis, the eliminating waste being, probably, an atrophic excretion. Hence:-

(1) Treatment from the neurotic standpoint, e.g. mental condition and other neurotic conditions;

(2) Nutrition directed particularly to the nervous system, e.g. cream milk, eggs, fruit, eliminating flesh entirely;

(3) Keep the surface of the skin thoroughly relaxed and use warm douch to control itching

and keep the skin soft.

(4) Look to the blood condition particularly where there is a malarial or anemic condition.

S Y C O S I S Here we have an inflammatory

contagious condition, either acute or chronic, involving primarily the hair follicles, particularly around the face. These are found in papule, pustule or tubercle form, or all in combination, after the development of the single form or forms they run together and there is an infiltration taking place which causes the formation of a general crusted surface. These are generally due to constitutional disturbances and are sometimes found in the mental diseases; in cases of physical debility and overworked conditions and in some cases associated with localized irritation, scratching, etc.

As a disease it represents a (2) serum exudation and infiltration, the (3) serum penetrating the hair follicles and increasing in quantity until (4) purulent conditions are established and the pus formation destroys the portion of the follicle. Then the pus is exuded between the hair shaft and follicle onto the epidermis. It generally begins at some point on the cheek and first appears as small discrete pustules, appearing in crops, inflammation of the skin being associated with this and this may go on until there is established a general sycosis dermatitis.

Treatment of Sycosis. Here we have an elimination process in connection with a neurotic condition, affecting particularly the hair follicle. It is associated more or less with the cleogenous secretory systems. In treatment attend to:-

(1) To the constitution in general, aimed more particularly to the control of the lymphatic system.

(2) Regulation of diet, have patient use nutritious and easily digestible diet, some form of oil is also recommended;

(3) Use freely hot and cold water, being careful to dry the surface without friction; sponging, compressing, etc.

(4) When the pustulation takes place, the minute points require to be treated as a surgical condition, drain and take use of antiseptics Do not attempt to produce absorption.

P O M P H O L Y X An acute exudative eliminative inflammation not superficial but quite deeply seated, the vesicles being subcutaneous. These vesicles are under the surface of the skin and are enlarged and sometimes disappear in a few days by absorption without detrimental effect. In other cases an eruption takes place and this is followed in a few days by a drying up of the eruptive points and an epidermal desquamation. This is always an expression of great nervous weakness. Found in those particularly whose nervous system refuses nutrition and found particularly in summer season, being probably a reaction of external heat on the low nutritive condition of the skin. The vesicles are found in the subcutaneous tissue. Thus the papillary layers are found in the subcutaneous tissue. Thus the papillary layers are involved and later, by exudation the epidermis is involved. Found on the palms of the fingers of feet. Starts as a small transparent vesicle entirely subcutaneous, slowly increasing in size and filled up with a whitish substance causing the vesicle to appear opaque. At this stage there is sometimes a spontaneous resolution, in other cases the accumulation goes on with exudation until there is a breaking down of the substance and a throwing off of the accumulation in pus form.

Treatment. Remove what is simple an effect of low nutritive condition of the nervous system, both oesthenopathically and dietetically. Nothing is required on the surface of the skin but something is required to sooth the surface of the skin because of irritation, using some emolient oil.

XVII D E R M A T I T I S Here is a simple inflammation involving the skin surface, caused by traumatation or heat or cold, sometimes due to the irritant action of some substance, whether applied to the surface of the skin or subcutaneously or exuded from the skin, representing the elimination of certain poisonous elements from within the system. One type of dermatitis is reflex from some other type of skin disease, the skin being reflexly hyperaemic as a reaction from a more deeply seated condition. Found also in uraemic poisoning, the elements of certain portions of urea on the surface of the skin causing an irritation of the epithelial cells. There are many varieties of dermatitis, depending:-

(1) On the condition of the skin, the degree of variety furthermore depending on

(2) The exciting cause, depending on degree of toxicity

(3) The general condition of the system.

In the simple type it begins as an erythema and in this case continues as an erythema, sometimes called Erythematous Dermatitis. In other cases the simple erythema changes to some of the other forms, as the papular, vesicular, pustular, gangrenous types, these being simply localized conditions of dermatitis at some particular point.

A. Traumatic dermatitis is caused by some form of violence, e.g., a blow or some form of other injury, e.g., from clothing, shoes, etc., also some types caused by the use of naphthalenaral acids, etc.

B. Toxic dermatitis results from poisons, the result of absorption of acids, turpentine, chloroform, etc., acting as an irritant, or from poison ivy or oak leaves.

C. Thermal Dermatitis, due to heat or cold, common burn or scald, or condition from absorption into the skin of moisture or vapor. The subdivisions are:-

D. Erythematous thermal dermatitis, the absorption of rays of the sun or the inhalation of fumes or vapor, also affects produced by a solid heated surface, e.g., red cautery.

E. Radiant form, e.g., X-ray burns, etc. In this case the ultra violet and violet or the I and H rays become decomposed in the skin, this decomposition causing redness of the surface of the skin without any epidermal destruction.

F. Bullous type caused by prolonged contact of the surface of the skin with heat or some heated surface up to the point where the skin exudes serous fluid, this being encapsulated beneath the delicate epidermal surface.

Echarotic type from exposure to intense heat resulting in excessive pain and the effect of the excessive heat causing exudation, producing a fibrous formation and an albuminous precipitation taking place and thrown out on the surface of the skin in connection with the exudation, giving a hardened and crusted condition on the surface of the epidermis which peels off.

FROST BITES. A type of thermal dermatitis. In this case the extreme cold instead of causing exudation caused by a coagulation of the fluid and this tends to extend deep down into the structures of the subcutaneous tissues. This is

particularly found in anemic subjects or in those parts of the body where the circulation of the blood is deficient. In development of frost bite;

(1) A hyperemic condition, after which follows an itchy or smarting condition;

(2) Followed by anemia of the blood which is driven in internally away from the surface structures;

(3) Dermatitis, proper, in which the coagulation takes place, gradually goes down to the deeper subcutaneous structures.

(4) Gangrenous type appears as sequel of hemorrhage in the form of circumscribed or diffused hemorrhage patch followed by the anemic condition in which the patch becomes white. Found particularly, in the hands and feet of diabetic patients. Bright's Disease and sometimes syphilis.

(5) Medicinal Type; Eczema caused by medicines.

(6) Dermatitis lichenata. Here we may have an inflammatory affection of the entire skin surface of the body. Primary disturbance is (1) hyperemia of the skin surface followed by a (2) breaking up of the blood elements and (3) elimination of the coloring matter from the blood, such elimination tending to destroy the continuity of the structure of the epidermis. We find (4) a scaling off and desquamation of the epidermis representing an eliminative process, this being secondary to tuberculosis, albuminuria or glycosuria. These conditions are quite numerous. Hence there is anemia and at times hyperemia. At menstrual period these spots are quite red, The skin all over the body is quite dry and there is a tendency to periodic chills, indicating the disturbance of the skin function, traced to some other condition, as the chill and febrile temperature may alternate. Some writers claim that this type is secondary to malaria but we can find no relation to malaria or to its symptoms.

Treatment of dermatitis. Here there is a condition that represents an incoordination between the deep and superficial nerve fields, surface and deeper skin circulations, or epidermal and corium circulations, which tendency is important in cases of hyperemia of the epidermis. The epidermis is in an acid condition, we have the excessive functioning of the skin. (4) The primary condition is a disturbed lymph condition, consequently we look for lesions in the lymph. Besides that we look to the second field of lesions, upper cervical region, the great vaso motor or brain system centers

also in the lower cervical and upper dorsal regions, from lymphatic standpoint. These are lesions corresponding with the regional lymphatic areas for the upper half of the trunk and its extremities.

The lower cervical represents the sympathetic part of the center and the upper dorsal the cerebro spinal center. Other lesions in the lower dorsal, to second lumbar, and in the sacral region. (1) These two points correspond to the lower half of the body and its extremities.

Treatment.

(1) Correct lesions and articulate the spine in these lymph areas as a coordinating treatment. The lesion is an inequality or incoordination between the surface and the sub surface circulations.

(2) Free use of alkaline waters to increase lymph volume both internally and externally over the affected area. Particular care in the medicinal type of dermatitis.

(3) The free use of turkish or vapor bath, especially in medicinal and thermic types, e.g., twice weekly for a few weeks, which promotes thorough elimination from the skin.

(4) Tonic treatment of the nervous system, consisting of articulation to the spine, free use of cold water on the surface of the skin. In cases where the dermatitis is of the burn or scale type a free use of heat, preferably dry is recommended.

(5) Stimulate the general circulation by a general treatment, by rubbing, friction, etc., over the affected part. In fast bites apply cold, an ice or snow, later the friction.

(6) The pain in dermatitis can best be controlled by inhibition over the skin of the affected part. When pain becomes very intense you may have to use a cocaine solution, which is only palliative and used only in extreme cases.

(7) In the exfoliation type, stimulate thorough the circulation of the upper dorsal area. When you get coordinating action on the entire surface circulation, attend to the constitution of the patient, especially looking for anemic conditions. In this type use the alkaline water, or soap bath and along with this apply oil to get emollient action and soften the dry surface of the skin and induce absorption also to stimulate the sebaceous secretion.

(8) In all of the cases of dermatitis the protection of the surface of the skin is an

absolutely essential point, wearing protection from excessive warmth and excessive cold by shades etc.

(3) Look particularly for constipation in all cases of dermatitis. This is one of the particular irritating conditions in dermatitis and any available means must be used. You may need to use salts in an enema, which does not absorb the salts into the system, but excites peristalsis in the water constipation. Sometimes a high oil enema is useful, particularly in secretory constipation.

Eczema

Is a non contagious inflammatory condition of the skin, acute or chronic, appearing first as an erythema, then there are papules, vesicles or pustules or all combined. Starting point is stasis in the blood circulation, followed by serum exudation, this being followed by infiltration, crust, formation, desiccation and intense itching. This is a skin condition that may be said to be endemic in this country, (U.S.) found in all classes of people, at all ages. Found particularly in light complexioned people with dark skin. Here we have an incoordination between the skin and the vegetation, the skin seeming to be too weak to grow the proper vegetation. Back of the eczema we may find disturbances such as rickets, diabetes, etc., i.e., constitutional disturbances, improper food, improper assimilation of food, faulty digestion, metabolism, retention of bi products in metabolism in the subcutaneous tissues of the skin. Represents a toxic condition, an accumulation or deposit of toxic substances in connection with the superficial circulation. It represents a derangement of the nervous system, associated with genite urinary, uterine conditions, the local causes being simple exciting conditions. 2. Exciting causes are atmospheric changes, moisture, use of certain soaps, particularly soap with certain potash elements, also the use of certain acid substances or mustard and pepper. Last but not least is constipation.

Morbid Anatomy. It is a catarrhal inflammation of the skin and a starting point of eczema is localized dermatitis. In the second stage we have a serous exudate. 3. The characteristic of the first stage is hyperemia, second, profuse serous exudation. In the third stage there is a yellowish discoloration of the exudate, representing the pustular or suppurative condition. In the dry type the exudate is evaporated, or absorbed in some way, and the result is a desquamation. In the chronic eczema the exudation is followed by infiltration and this results in the thick and hard condition of the skin, the infiltration taking place into the corium. Symptoms, The symptoms in all types is a (1) catarrhal inflammation, then gustation itching and burning due to the accumulation of certain elements, as acid, or the drying process following exudation.

History. In the development of the eczema it may follow an acute or subacute chronic series of changes. In the subacute type there are several acute variations associated with the development of one acute attack following another. In the

subacute type the inflammation is not so severe as in the acute. In the chronic type the thickening becomes extreme and then there is intense itching and burning associated with the surface of the skin.

(1) Erythematous type. Redness of the surface of the skin with a yellow tinge. There is slight swelling but no discharge on the surface of the skin. In the latter stage of this type the skin is covered over with a thin growth of exfoliated epidermis. Here the itching is intense and after a few days the surface of the skin becomes rough, the normal secretions from the sebaceous glands are absent. This type is commonly found on the face and in connection with the genital organs. One complication is conjunctivitis, which is found especially in middle aged people, or in those whose circulation is deficient.

2. Eczema Papulosa. Appears in the form of small round papules, bright at first, then a deep purple. The single papules are at first discrete and then become confluent. Here there is extreme itching and friction or rubbing of the skin, on movement of the skin will cause hemorrhage, hemorrhage accumulating on the papular surface being blue in appearance. Found on or around the lower limbs, particularly in old people.

3. Vesiculosa. Begins with great burning pain, intense redness and swelling, followed by large number of vesicles, at first discrete, then confluent. Later the vesicles are filled with a yellowish fluid, rupture, and fluid becomes encrusted on the surface of the skin. This type appears in successive crops and may be found at any point on the body or all over the body, especially on the face. Lasts from a few days to a few weeks and may recur from time to time as the condition develops.

4. Pustulosa. Nearly always secondary to vesicular type, fluid being changed to pus after a short time. The pus when discharged into the surface of the skin appears as a greenish yellow substance. Is most common on the scalp.

5. Rubrum. May result from any of the four preceding types. Surface of the skin is very red raw and much inflamed, particularly at certain points. The exuded serum is dried into a thick yellowish deposit very closely adherent to the skin surface and when removed it takes the skin off and leaves a raw surface.

6. A type is found in the form of reddish patches, of a bright scarlet color, appears secondary to some of the first four types mentioned.

7. Fissure Type, found in the form of fissures, or cracks, particularly on the hands and face. Later stage of some previous type.

8. A type found on the palms of the hands and soles of the feet, when papillary layer becomes thickened in base portions of the body, due to infiltration. Hyperaesthetic generally.

In differentiating eczema we must differentiate it on the basis of those conditions or signs that are always present, e.g.,

(a) Some form of infiltration, the degree varying with the severity of the eczema and the field of its location;

(b) Itching. This is always present and is a differentiating point between eczema and the condition of similarity;

(c) Redness, varying from a bright scarlet to a red that is almost black. This differentiates it from Erythema;

(d) Thickening of the skin, secondary to infiltration giving the skin the feeling of a piece of leather.

(e) Scalling, always present, is either slight or extensive, to point of exfoliation;

(f) Crusting. The typical eczematous crust is an amber colored serous crust that distinguishes it from the other conditions where you have more of a yellow crust, the typical pustular crusting;

(g) Oozing or moisture, sometimes very slight, sometimes amounting almost to an oedema on the surface of the skin.

Eczema is found principally on the anterior surface of the body, on the flexor surface of articulations and across the enfolding and overlapping of the surface of the skin. The different types of eczema represent the predominance of one or more of the characteristics just mentioned. 1. The first found types have all a common base, differing only in the surface expression, e.g., erythema, papule, pustule or vesicle. In the type of eczema mentioned as scaly, fissured and rubrum, the basis is still the same but the surface of the skin is subject to a secondary change like scalling cracking and hyperaemia. Has a tendency to change from one type to another type, the fundamental symptoms of irritation and this is primarily constitutional and secondarily local, that is, one irritation both from within and without, from within, constitutional conditions, diabetes, rheumatism, etc., from without, atmospheric conditions, some forms

of acid, soap, etc. This means from the standpoint of treatment all type of eczema have an underlying constitutional condition, the most common form being some form of indigestion or failure of interstitial elimination, back of that point lies stomach or liver conditions.

Treatment. We must remember that eczema is an attempted elimination with deficient circulation and inability of the skin to complete the elimination. The point ultimately is the fact that it is found in neurotic individuals and represents a neurosis, the cause locally being a disturbance of the lymphatic circulation, here the treatment is to overcome:-

(1) Overcome the disturbance of the lymphatic condition, stimulate the lymphatic circulation by articulation of those areas and stimulation of the general circulation, this being back of the lymphatic circulation.

(2) Attend especially to the terminals of the sympathetic system by manipulation of the skin itself and by stimulation of the nearest centers (sympathetic) ganglion centers, etc. Pay attention to the lymphatic glands in the axillae and inguinal regions, using strong flexion with rotation and abduction of the extremities, arms, legs.

3. Try to remove the exciting cause or causes in the form of the irritation, from the stomach, intestines, etc.

4. Make patient rest from any activities that may excite the nervous system or that will stir up the perspiration as skin is excretory to the nervous system.

5. Attend to the constitutional condition on the nutritive side - diet, etc. 2-9 Dorsal.

6. Give a nutritious diet, from side of nervous system, eliminating all stimulants, giving only such food as it readily digested by the system or that does not remain long in the digestive tract. Have patient take free exercise. Use alkaline bath freely, also alkaline drink.

7. Keep the local part clean, removing the crustation that may be present, using soap and water. Keep the part dry as possible use only hot water over the part affected. In drying avoid all friction.

Hypertrophies of the Skin --Neurosis -- Secretory -- Inflammation.

Psoriasis - Here is an affect resulting from a chronic inflammation and some other condition.

Psoriasis is a "Serial" or infective disease, continually progressing, constitutional condition.

2. Psoriasis represents a condition in which the skin is thickened and elevated in patches, 3. patches being redened i.e., there is an inflammatory process. We also (4) find a large number of scabs representing the desquamation stage. May be found in some cases hereditary from the neurotic side, or following diseases that affect the nutrition of the skin, e.g., rheumatism, gout, scrofula, syphilis, gonorrhoea or conditions causing the impoverishment of the blood, e.g., scarlet fever, diabetes, etc.

Also represents a nervous condition due to non trophic condition of the nerve centers, whether caused by intoxication or any other process, this means (b) lack of nutrition. Also found in chronic alcoholic subjects and in those who have hereditary syphilis or gonorrhoea.

Exciting causes are the irritants, chemical substances in those who work with chemicals, soaps, litions, ointments, etc.

Morbid anatomy (1) Inflammation and congestion of the skin. (2) enlargement of the papillae, dilatation of the blood vessels of the corium. Papillae are filled with the infiltrated matter, hence the condition affects the papillary layer of the corium, (3) Excessive scale formation represents a hyperplasia involving the reticular and the epidermis in general, Begins in a small red spot corresponding to a papilla then behind the surface of the skin covered over with scales separated from the healthy skin. Spots gradually increase in size until they form patches and finally scales. When papules increase in size they are covered over with dry adherent scales. When this scab is removed or falls off red surface of the skin is left behind and still there is the elevation of the surface of the skin, indicating hypertrophy of the skin. Papules commonly develop in rings, a number of these uniting and form a chain extending along the arm or leg usually on the extensor surface. These may appear and disappear periodically. In some cases it disappears very suddenly, followed by some complication involving the heart, as endocarditis, angina pectoris, or some congestion of the brain, or intestinal condition.

Treatment. We are dealing here with a distinctly neurotic condition, starting point being an intoxication or non trophic condition of some of the nerve centers. The immediate cause of the local psoriasis is an interference with the circulation and usually some nerve tension, involving the

sympathetic system, causing a vaso dilatation which results in an increased nutrition but toxic in its nature, instead of the skin getting normal food it is getting the intoxicated food and this in abundance, resulting in generation of the tissues.

Lesions are nearly always vaso motor and found in the vaso motor area of the part involved, because the trouble represents a vaso dilatation.

(1) Attend to the nervous system, treating back toward the neurotic condition and directly in the lesion area to correct the circulatory condition.

(2) Stimulate the activity of the skin, alimentary tract and kidneys.

(3) Attend to the hygienic conditions, free active exercise, bathing, not up to point of exhaustion, thorough ventilation, both from the lung and general body side.

(4) Limit down to a minimum and nitrogenous food from the dietetic side, all exciting foods, stimulants of any kind, patent medicines, including tobacco, alcoholics, etc.

(5) Local use of hot water followed by rubbing in of olive oil or cod liver oil and then follow this by washing the skin thoroughly with carbolie acid soap.

(6) Have patient use freely of alkaline waters internally.

Lentigo or Freckles. here is an excessive pigmentation of the skin, found in the form of small spots, generally localized. In color these spots are yellowish brown with a blackish tinge, usually found on the face, sometimes on the scalp, arms and hands, i.e., exposed areas. In most cases they represent a peripheral neuritis, aggravated by excessive exposure to sun and wind. The freckle itself consists of a circumscribed accumulation of normal pigment in the reticular layer of the skin. Found particularly in those of light and red complexions, when we have an incoordination from the pigmentation side and aggravation from the light or wind on the skin.

Treatment. Here is primarily a disturbance locally in the venous circulation with a secondary inequality of distribution of pigment.

(1) Free the circulation, (general and local) particularly the venous, looking to the area where the condition is found. Treat the muscles, articulate and attend to the jugular circulation. Give vibratory treatment around the face and neck or the area affected.

(2) Cultivation of deep breathing to promote thorough oxygenation of the blood.

(3) Bathe the face or affected part with salt and water and use no other water on the face. Have the patient dry the part affected and in the sunlight.

(4) Soap to be used is carbolic acid soap.

(5) Simplest and best lotion is lemon juice. Pure if skin is normal. If skin is thin mix lemon juice glycerine and rose water. Paint the freckles each morning with the above.

(6) The free message of skin surface (dry) there deeply seated the pigmentation goes down deep into corium layer of skin. Cut tomato and rub into skin. Horseradish is a #1 rubbed on but follow this by using buttermilk.

Chloasma. Excessive pigmentation associated with a general discoloration of the skin, varying from the yellowish to the blackish color. Found in both sexes and at all periods of life. As an idiopathic condition found principally in the female as a result of irritating condition of the skin due to blood changes; also secondary to subburn Simplest type found is secondary to some of the chronic blood conditions or diseases, as cancer, malaria, also in connection with many of the uterine disturbances. The discoloration may be found either locally or generally, in the local type being found around the neck and face. Sometimes it is a complication of Addison's disease, the discoloration in this case being of an olive green color, also found as a result from excessive use of oil, here the color is slaty generally. In the uterine type we find the discoloration particularly on the face and most marked on the temples. In this case it is of a bright or dirty yellow color, associated with dysmenorrhea or hysterical condition and any menstrual disturbance in neurotic subjects this is found around the eyelids and radiating over the cheeks. forehead and temples are usual field of localization.

Treatment. Here is a neurotic condition which has its exciting cause some disturbance of the liver or some of the organs like the spleen or suprarenal bodies, which are accessory to the liver in action.

(1) Directed to the neurosis, either a general or local neurosis.

(2) Special attention should be paid to the liver to stimulate its action. In most cases we find suppressed or retained bile in the gall bladder or gall duct or both.

(3) Thorough circulatory treatment both deep and superficial circulation.

(4) Keep the excretory system open, the skin, kidneys and intestines. (Always in all sicknesses)

(5) Local vibratory treatment with inhibition over the affected part. Very hot bath, etc., before vibration. The frequent use of the turkish vapor or Russian baths, open air, lack of oxygenation is the frequent cause of this condition.

Nevus Pigmentosus. A condition either congenital or acquired. Represents hypertrophical condition of the skin and connective tissue with a circumscribed pigmentation. May be found in all sizes and shapes, usually a round or flat sac, sometimes smooth, sometimes rough, even wart. In the latter case there is some complication at the foundation of the warty condition. In some cases it is slight and affects only the skin, in other cases it affects the connective tissue as well and in this case it may or it may not be associated with hair development. When this type has hair formation or development it is called **Nevus Pilocus**. Found most commonly on the face and neck, sometimes on the back. Represents a typical circulation hypertrophy with the excessive pigmentation in the affected part.

Treatment. In some simple forms the condition can be overcome by circulatory treatment, particularly when found in children and young people and taken early. Some cases develop from injections. When the condition is well developed or hardened excision or cautery may have to be used. In some cases it can be removed by ligation. In little children it is difficult to remove because of the close connection of the nerves to the blood supply.

Callosities or Tyloma. Here is a hypertrophied condition of the horny portion of the skin with the formation of a distinct patch, very hard and of bright gray or yellowish color. It is found on the hands and feet in all sizes and shapes, principally in the middle period of life and is usually associated with an external cause or condition, e.g., excessive pressure or friction such as too tight shoes, or in the hands of those who use chemical substances. Found also on the fingers, in writers on the sides of the fingers.

Clavus of Corns. Condition similar to the above. Here we have a localized or circumscribed callosities in which the rounded ridged or furrowed condition becomes flattened and in the deeper cell structures become involved on account of the flattening and compression of the superficial cells. Corns represent an hypertrophy of the epidermis, this causing the packing together of the connective tissue underneath, until a well defined area of compression exists. Found principally on the toes and are caused by pressure, or by lack of evaporation from the feet or toes, in this case we have the hypertrophy of the horny layer of the skin, this local enlargement assuming the shape of a corn or cone with base outward and apex inward. In structure it represents an epidermal cell arrangement in concentric layers with one or more roots at apex of the cone. These roots press into the deep structures of the true skin and by pressure on the papillae cause an irritation of the minute capillary nerve and it is this pressure that causes the pain. When the corn is located between the toes it is usually of the soft type. This is due to the fact that the corn absorbs all the moisture available and this keeps it soft.

In some cases the corns develop underneath the nails and may sometimes be found on the fingers. The abnormal pressure in this case is caused by the nail. Condition is found particularly in people what is called "claw nails".

Treatment. We have here a disturbance of the circulatory system due to the external pressure or some irritating condition in connection with the foot.

- (1) Remove pressure wherever it may be.
- (2) Free the circulation to the part involved. Thorough manipulation.
- (3) Bathe the feet frequently in hot water and following this use freely around the local part castor oil, rubbing it in well.
- (4) Look out for a dislocated or displaced condition of the joint in the neighborhood of the part involved, e.g., the large joints represent a typical callosities and you will find dislocation of the joint. If the deformity is much aggravated you may have recourse to surgical methods.
- (5) In some cases it is necessary to excise the hardened surface, either by ligature or cautery or some other method, as it cannot be absorbed.

The best method of removing the corn is to soak it well in very hot water and follow with frequent application of castor oil. If between the toes keep the toes separated with some absorbent cotton. If the condition is associated with claw nails keep the upper surface of the nails scraped or rubbed very thin and while this is done keep the nail cut at its periphery, flat not rounded.

Keratosis - Philosis. Hypertrophied condition of a very small portion of the skin surface, about the size of a pin head in the neighborhood of the orifice of the hair follicle. Found in boys and girls at the age of puberty. On close examination are found to be associated with orifice follicles. The cause is the hyperactivity of the glands associated with the hair follicle. as a general rule the exciting cause is lack of cleanliness, resulting in an accumulation of sebaceous materials and dirt, causing great itching over the affected part.

Associated with this we have another form of hypertrophy in which the corium of the skin is hypertrophied. Here the horny growth extends down into the corium, found in connection with injuries of the part of the skin surface where it is either torn or rubbed off. In this case the formation of a sebaceous cyst and a hyperplastic growth of the rete layer in connection with the corium develops. In this case we generally find ridges arranged parallel to one another. Are sometimes found on the face, scalp and hands. Are hard outside and soft inside and should be differentiated from supposed syphilitic nodules, for they are ~~different~~ frequently found in the same case.

Treatment.

(1) The free use of soap and water.

(2) Secondary to the above use a glycerine solution, either by itself or in water, or maybe euthymol paste. Nothing will so thoroughly cleanse the condition as Euthymol paste and pack with very hot pack.

(3) Turkish baths, periodically, are of benefit for constitutional effect.

(4) Direct treatment to stimulate the circulation and build up the constitutional condition.

Lichen Ruber. Non-inflammatory condition of the skin in which we find small red papules covering the entire surface of the body. Generally beginning local. Most aggravated condition is

intense itching associated with this? Represents a constitutional condition due to some trophic disturbance of the cutaneous surface involving the nerve supply of the skin. All the layers of the skin are effected the epidermis being dilated, also the blood vessels of the corium. First appears as a very slight eruption of bright red papules. These become firm and hard and later become scaly. First appearance is on the extremities. Is a hypertrophic condition in later stages due to papillary infiltration. In some cases the entire skin will become atrophic and that will represent such a low nutritive condition that it will react on the nervous system and may cause the death of the patient. Constitutional condition not understood.

Treatment. Here we have a neurosis of the nerve terminals caused by or dependent on some constitutional condition.

- (1) Attend to general constitution of patient,
- (2) Diet patient so as to force nerve nutrition, milk, butter, cream, oil, fruits, etc.
- (3) Keep intestines open, rather diarrhetic than otherwise for elimination of toxins.
- (4) Use alkaline bath for itching and also to cleanse the skin and stimulate the nutritive processes and allay irritation, the warm bath or hot bath alkaline is preferable.
- (5) Thorough frictional treatment over the surface of the skin following bath.

Verruca - Warts. Limited hypertrophied condition involving the cutaneous papillae. Consisting of formation of a round or pointed irregular soft substance which afterwards becomes hardened. These may develop in some cases without any known cause and are supposed to represent some constitutional condition. In some cases it is thought to be in contact with certain substances, such as friction pressure, exposure to intense heat. The wart has its starting point in the connective tissue, the substance accumulating there being thrown out into the papillae and these substances are walled in by sacculation and these accumulate and irritate.

In most wart conditions there is an abnormal blood supply established in the form of minute arterial loops and act as sort of suckers to supply the warty matter with elements of nutrition. Found on the face, scalp, or feet,

The different types are:-

1. Vulgaris type, found always on the hands, representing an elevated papillary accumulation and secondary to sacular growth. The base is always hard and the ~~xxx~~ apex soft.

2. Flat or broad, wart, slightly elevated and consists largely of soft greasy material, found principally on the back and almost exclusively in old people, is almost a type of lipoma. Is associated in some way with abnormal activity of the sebaceous glands. Dirty yellow in color, ~~may~~ pigmented. Simplest type of malignant tumor that exists.

3. Small pinhead Type. Found on eyelids consisting in little treddy elevations above the surface of the skin.

4. Found on scap, almost like a little crab foot, consisting of a hard base projecting outward curling around something like a claw.

5. Pointed type. Maybe simple or multiple, representing a condylomata or cauliflower type of wart. Here is a specific type of wart consisting of a number of elevations, irregular and closely packed together, found in connection with or secondary to syphilitic affections. May be moist or dry, the worst type having a yellow discharge with a yellowish crustation.

Treatment of Warts. These represent constitutional disturbances either general or specific as in condylomata.

(1) Constitutional treatment.

(2) The application of compresses in the first three types mentioned, vulgaris, flat and pinhead. In other types, like the last two, it must be removed by ligation or cautery, acid or sergi cal methods. The electric cautery is the most successful method.

Ichthyosis or Fish Skin. Hereditary or congenital hypertrophy of the skin, marked by dryness followed by scalling of the epidermis without desquamation. Sometimes the papillary layer of the skin develops out in early life without any epidermal smoothing process and the scale formation is the result of this papillary hypertrophy. Epidermis is enlarged on the mucous layer and there is a distinct separation between the corium and cutaneous layers of the skin. The separation is followed by infiltration and blood engorgement. Sometimes found over but a small portion of the body and at other times on the extremities or

entire surface. There are three types:

(a) Congenital beginning to develop in the interuterine life and is the result of the imperfectly developed condition of the skin. Found in the kind of a small pox skin when the child is born, may last but a few days and disappear;

(b) Simplex type, common type in which the whole skin surface of the body is hard and dry and covered over with white and whitish gray scales, one crop disappearing and followed by another;

(c) Severe type, in which we find the hypertrophic condition of patches of skin, found in a very dark colored type on the arms and back, along or following the path or paths of some nerves. At first it is hypertrophic and later becomes atrophic and the type may continue throughout life or may be cured. Along with this type is a hyperactivity and later becomes atrophic and the type may continue throughout life or may be cured. Along with this type is a hyperactivity of sweat and sebaceous glands.

Treatment.

The first type will quickly cure itself and pass away and may be due to some incoordination in development between nerves and skin or some condition of vernix caseosa.

In the other two types, simple or severe
(1) Manipulation of the blood and lymph supplies to free their circulation;

(2) Strive by elimination process to prevent accumulation of any toxic element;

(3) The use of salt water baths in order to promote the process of exfoliation, followed by free application of olive oil or cod liver oil. Some forms of alkaline soap should be used; frequent use of vapor baths to promote scaling process. Use no acid soap.

Scleroderma. Acute or chronic condition, marked characteristic is pigmentation up to the point where the epidermis becomes hardened. Found in female sex at or after middle life, most commonly associated with rheumatic conditions, sometimes nervous diseases, when there is prolonged period of nervousness, such as nervous dyspepsia. Found on the extremities and nearly always sympathetic. In the early stages it may be associated with febrile temperature and either chilliness or rigidity. In some cases when the conditions become chronic the two separate layers of the skin seems to be united and in this case the skin is so hard that it is almost

immobile. at this stage or class the temperature is nearly always subnormal with a marked surface sensibility. The secretory function of the skin is suspended.

Treatment. We have a condition here that is secondary to constitutional conditions and therefore the treatment is principally constitutional to build up the blood and nervous systems.

(1) Local hygienic conditions. free use of hot soft bath and rubbing in oil, cod liver oil or olive oil;

(2) Nutrition should be given to the patient that should be assimilable without waste, pre-digested food.

(3) Thorough vibration and kneading of the skin, preceding by putting the part affected in hot water for some time, as it is generally over the extremities this may be done for two or three hours. Use soft water in connection with the bath;

(4) In the new born child apply the same line of treatment every two hours for ten or fifteen minutes, particularly the soaking of the limbs in hot water - inhibition and kneading and then apply some oil.

Elephantiasis of the skin. A hypertrophic condition affecting the cutaneous and subcutaneous structures. There is in the development of the condition a marked inflammatory process, dilatation of the blood vessels, marked increase of lymph in the fascia field. The next stage is a sort of edematous swelling, then a hardening process.

The primary cause is a prolonged obstruction of the lymphatic system. Found principally in the male sex and in the tropical countries. Begins in a dermatitis or an erythema, the skin being very red, much inflamed and then swollen. Found chiefly in the lower limbs and round the eyes and nose. In this latter case it is a dermatolysis. The liquified substance is retained, coagulated and more or less organized. The real dermal substance is destroyed and the new substance formed. The skin shows a yellowish discoloration is rough and rigid and is found principally in those portions of the skin that are loose or in folds or creases. In that case there is a non-trophic condition of the skin which lays the foundation for dermatolysis. As a rule it is found in people past middle life when the skin is losing to some extent its functions.

Treatment. If the condition is taken in the time the results are generally good because it is a

deficient lymphatic condition.

(1) Treatment directly to the general blood circulation so as to prepare for the lymphatic circulation: increasing the blood pressure to this increases the lymph pressure;

(2) During the inflammatory process see that the patient has absolute rest, keeping the limbs in the horizontal position;

(3) Use the hot and cold water alternately in order to control and keep under control the inflammatory process;

(4) Keep the localized congestion under control by thorough manipulation of the limb itself, beginning at the distal extremity and treating up to the iliac region and have leg elevated on inclined plane, then rotate the limbs at the hip. This is also good for oedema of the limbs, in heart condition, and will in time cause the circulation to care itself.

Atrophic Conditions Of the Skin.

Albinismus. Here is a condition marked by the absence of pigmentation, the skin being entirely whitened. This white is a milky white coloration. Found principally in the eye and its first point of appearance is the iris, choroid, etc., and may extend to other portions of the body. Is generally associated with nervous diseases.

Treatment of the condition. Try to (1) overcome the neurotic condition by stimulation and nutrition of the nervous system and (2) the establishment of good circulatory conditions along the same line as called for in other conditions.

Leukoderma or Vitiligo. A condition acquired in connection with the skin, the skin or portion of the skin being covered over with white patches which gradually increase in size. The white spots are always surrounded by a yellowish areola, i. e., the yellowish pigmentation surrounds the point which lacks pigmentation. At first the spots are very small, milky white and gradually increase in size, always retaining a circular shape and developing as discreet spots in size until a number coalesce. Are found on the back of the hand, scalp, forearms and sometimes in spots or patches on the trunk of the body. Represent some local disturbance of the peripheral nerve supply and are found principally in people with a dark colored skin, one very typical condition we can find in the sunburned conditions of the skin.

Treatment. (1) Treat the nervous system; (2) frequent use of oil locally, because you want to locally force the nutrition of the minute peripheral nerves, Hygienic measures.

Samities. Atrophy of the skin, more particularly in relation to the hair follicles, found either in congenital or acquired type. Condition comes on at any period of life, usually developing in connection with nerve shock mental shock or some severe strain of the nervous system, sometimes to an exhausted condition of the nervous system, as typhoid typhus, scarlet fever, very severe cases of gout and some types of scalp or facial erysipelas. When localized on one side of the head we find the skin and the hair on that side turning white.

Treatment. (1) Application of a lubricant to thoroughly lubricate the localized part of the skin. The best type of oil in this case is the walnut oil. Following this give localized treatment, kneading, etc. to the skin or part affected. (2) Thorough relaxation of the rigid condition in those areas.

In the typical atrophies of the skin the skin is diminished in thickness; in the other three conditions mentioned there is only a change in the pigmentation of all the layers of the skin i.e., general constitutional. This may extend to one or more of the layers of the skin and sometimes is due to excessive elimination sometimes to a typical degenerative process, e.g. dermatolysis without any subsequent hypertrophy. The skin becomes thin, waxy and wrinkled: it is also frequently discolored and the condition may or may not extend to the hair follicles. In some cases the glands entirely disappear, and in this case the blood vessels become dilated and we have evidence of them on the surface of the skin. One secondary condition that is found is alopecia or falling out of the hair. This takes place as a result of ---

(a) An atrophic neurosis involving the peripheral nerve ~~distribution~~ distribution.

(b) Following certain diseases, more or less toxic in nature, the nutrition of the hair being so interfered with by intoxication that the hair dies, e.g., in syphilis;

(c) The result of the inflammation of the cutaneous surface of the skin;

(d) Following formation of crusts, secondary to some condition like eczema. The condition is

found more commonly in the male sex. The reason for this is supposed to be lack of subcutaneous fat tissue. In some cases we find it in both sexes following constitutional diseases, even in children of the sickly or anemic type or may show in a very slow development of the hair; may be secondary to intense gastric disturbances followed by toxemia, or in other cases it is the result of presence of parasite which burrows in through the follicles of the hair.

Treatment of atrophic condition of the hair and hair follicles. Main points are :

(1) Tonic treatment to the nervous system to build it up to its normal condition, i.e. eliminate neurotic involvement of nervous system.

(2) Stimulation of the cutaneous circulation, both the blood and lymph.

(3) Keep up the tonic condition of the head skin locally by the use of olive oil. This is to compensate for the absence of normal sebaceous secretion, using olive oil for its nutritive qualities.

(4) In Alopecia attend to the hygienic condition of the hair, e.g. the washing and keeping thoroughly cleansed and singeing the ends of the hair and rubbing olive oil in thoroughly into the roots, thorough kneading of the scalp, friction, etc.

Tumorous Condition of the Skin.

Rhinoscleroma. A new growth of the skin in which we find an elevation of the surface of the skin, flattened and not rounded or tipped. Found principally on or around the nose. Begins generally in the septum and extends outward to the surface by the formation of tubercles that grow out toward and under the epidermis.

Treatment. (1) Treat the respiratory conditions associated with the polypoid growths and other vegetations that may be found in the upper nasal passages and the treatment for these should be applied, either otopathically or surgically, to remove them.

(2) Treatment of the circulatory to the nose and the structures around the nose.

(3) Where tubercles are imbedded in the nasal mucous membrane use lubrication as a means of lubrication and getting out the growth. Oil of Ergot and oil of Thuja. If hair follicles are involved then use oil of Ergot.

Lupus of skin. There are two types of lupus:-

(a) Erythematous lupus. A new cell growth in the skin in the form of a rounded reddish elevation covered over with thin yellow adherent

scales. Hard to differentiate from Rhino-sclerom. Found principally in those who are rickety or constitutionally weak, or in cases of defective nutrition, chlorosis and tuberculosis. Found in light skinned people or in those with a tendency to scrofula. Begins in a few rounded spots with a pale center, the pale portion of the elevation being depressed like a little pit. The paleness and depression usually gradually decrease and the spots change from the discrete to the confluent, then the skin becomes white, shiny and scaly, the scales drop off and leave a scar behind. This type is found chiefly on the face, nose, eyelids and ears.

(b) Lupus Vulgaris. Here is a new cell growth of the skin and of the adjacent mucous membrane. Begins in the form of reddish or brownish spots, consisting of papules and tubercles. These are later absorbed in connection with the interstitial tissue substance, leaving a scar formation. This type usually develops in childhood, always before the period of puberty. Begins in small discrete red or brown spot in the corium and epidermis or true skin. At first it shines through the epidermis and is not at all sensitive to touch. Later it becomes sensitive as a new blood vessel development takes place into the structures of the small tumor. If it goes on to the ultimate development takes place, into the structures of the small tumor. If it goes on to ultimate development there is ulceration and pustulation following and then pus formation. When this crust formation passes away there is cicatrization or the formation of a very large watery surface. This type occurs principally on the nose, cheek or the ears.

Treatment of Tumor condition. Here we have a condition secondary to constitutional disturbances. hence --

- (1) Treat for constitutional impairment.
- (2) Attend to the hygienic conditions of the skin, giving thorough tonic treatment, using freely internally and locally some nutritive oil, e.g. olive or cod liver oil.
- (3) Treat locally to promote absorption from the lymphatic side that is, local treatment around the affected parts.
- (4) Have the patient exercise thoroughly in the open air and let affected part get both air and sunlight, a sun bath is excellent.
- (5) Serve nutritive diet fats, etc.
- (6) Give what is called the light treatment, Finson Light, using first the condensation of sunlight by means of powerful glass apparatus for condensation purposes, second, use the colored

lights, red color is destructive and if you want to break down and prepare for elimination red is the best. Violet is curative, soothing color. In this case a combination of the two is advised.

Serofuloderma. Here we have an ulcerated condition, secondary to the serofulous condition found usually on the neck, sometimes on the face. Always preceded by the hardening and enlargement of the lymphatic glands. The hardening process goes on for some time and then there is a softening followed by disintegration, i.e. typical serofula and the stimulated tuberculosis. The local skin becomes thin and either a reddish or violet color. Then the affected part breaks with destruction of the skin and pus formation, followed by crusting and later by granulation in the formation of the new cicatricial formation. Sometimes found to an enormous extent in what at one time was called "King's Evil" or "King Charles' Collar".

Treatment of Serofuloderma. Treat osteopathically as in case of serofula.

(1) The best climatic condition for this is the sea air.

(2) Where the pus formation takes place see that it is ~~maxxaxd~~ evacuated and always through removal by scraping out the pus or by using some surgical chemical (iodine solution) then dress as in other surgical cases.

Molluscum. This is a disease affecting the upper epithelial layers of the skin with the formation of minute globules or small wart-like tubercles or very minute white or pinkish nodules. It is found in badly fed nourished or chronic anemic people. It is contagious, beginning in a simple herpes and affecting the hair follicles by resorption. It first appears in form of a small rounded tumor, gradually increasing in size until it becomes flat on top with a small black spot in the center. It develops very slowly and is found on the face, eyelids cheeks chin and when it has developed it produces a very marked deformity on account of the hypertrophic or tumor like formation.

Treatment.

(1) We require to get back to the constitutional condition that underlies it. Perverted nutrition, etc.

(2) Thorough stimulation of the circulatory.

system and of the eliminating function of the skin.

(3) Local use of sulphur soap or an alum solution in connection with the water to get an astringent action on the minute tumors aforesaid in connection. Sometimes caustery is used to remove the tumor.

Leprosy of the Skin. Here we have a chronic malignant contagious condition of the skin, which when it begins to develop will continue, probably for years, the supposed course being from ten to fifteen years. Found principally in the Scandinavian portions of south Russia, along the Mediterranean Coast and in the States of Minnesota and Louisiana. Some of the older writers claim that it is due to certain elements from the soil, extracted by the food supply, others that it is due to fish eating, but this is not proved, as numerous fish eaters do not have this condition. It is really an hereditary after effect of syphilis, very like King's Evil it appears. The means of non-transmission may be by direct contact or through the medium of the mosquito. The lesion in the skin consists of a deposit of new material in the form of small round cells, these cells being closely packed together. It is a typical Neoplastic Malignancy. It first attacks the corium of the skin and then develops both cutaneous and subcutaneously.

The second field of involvement is the blood and lymphatic systems, the lymph being special medium of carrying the disease to other parts of the body. Leprosy is a lymphatic disease.

Third stage is the appearance of small blisters or an eruption around the posterior aspect of the ears and nails of the thumb or some very fleshy part of the body. The condition is secondary to a depreciation of the peripheral nervous system.

There is a tubercular type in which the leprosy develops in connection with the tubercular nodules i. e. leprosy very closely related to constitutional tuberculosis. Leprosy has a particular tendency to develop into either pneumonia or pulmonary tuberculosis. In the last stage the local part becomes anaesthetic with the entire loss of sensibility, the area becoming dry and thoroughly atrophic. Leprosy is practically incurable.

Treatment .

(I) Complete isolation of the patient. Not so contagious as tuberculosis. Any toxic condition can be carried by the mosquito.

(2) A very nutritive diet particularly fat or oil the extensive use of lime water, both internally and applied locally. Lime water assists lymphatic system to eliminate tubercular or leprosy toxins - give lime water.

(3) In controlling the pain treat the spine upward consisting of inhibitory treatment, followed by articulation.

(4) Use surgical method for breaking up and eliminating the localized tumor formation. Tumor masses are entirely anesthetic owing to extensive blood supply yet lacking entirely nerve supply.

Sarcoma of the skin.

A superficial malignant disease, attacking the cutaneous and subcutaneous structures. Primarily due to infection from some other point in the body the primary local cause being in the corium, new subcutaneous cells being found, called the spindle cells; these are very closely packed together and frequently surrounded by a layer of connective tissue. This forms small round nodules.

Carcinoma of the skin. A type similar to the above. This is also malignant, representing the deposit and accumulation in the epidermis of carcinomatous material. Later this deposit extends to the subcutaneous tissue. The two types found are:

(1) Epithelioma, which is always primarily in the skin.

(2) Scirrhous type, primarily in some other part of the body and secondarily in the skin.

Treatment of these conditions. The most that can be done is to give constitutional treatment, arousing the blood and lymphatic systems. In many cases the incision of the local tumor surgically or the use of some measure by which the tumor may be separated from the skin by certain solutions, to be discussed later.

Miscellaneous Types of Tumors.

I. Keloid. Flat rounded elastic nodule, serous in its nature, embedded in the skin. Always slightly elevated above the surface of the skin. Found on the neck, sternum and back. Never ulcerated. Generally unless removed surgically will remain for life, the only trouble likely to arise is in a patient with a cancerous diathesis.

Xanthoma- Here is a new growth of connective tissue, beginning in a chronic hyperplasia of the deep layers of the skin, which followed by a great accumulation of leucocytes which becomes

antangled in the connective tissue and die. They do not form pus but new tissue and this growth becomes very hard. Usually they do not give any trouble, except in scrofulous or tubercular patients when they may ulcerate. Excision is the only measure of treatment.

Lipoma. New tissue growth representing blood accumulation mixed with lymph. The vessels deposit the blood at some particular point and in some cases new anastomotic blood vessels are formed. They are found along the line of the middle or deep circulation. Take the form of subcutaneous nevi. Sometimes they grow enormously large. They may be treated surgically only and this is difficult as there is liability to hemorrhage and requires ligature of the blood vessels. These tumors may also be found in portions of the rectum.

Neuroma. Development of abnormal nerve tissue in the form of papules, affecting the corium and subcutaneous tissues. They do not involve anything that is serious unless occurring in the neighborhood of some blood supply and causing pressure. It is said they sometimes develop internally in the brain.

Parasitic Skin Diseases.

Scabies or Itch. Contagious disease produced by an animal parasite. The parasite burrows into the skin and papules, vesicles, pustules develop with excoriation. The itching is caused by cutaneous inflammation.

The exciting cause is an unhygienic condition of the skin. The germ is a minute parasite, both male and female. The female does the burrowing, through the epidermis and burrows right into the subcutaneous tissue, depositing small ova there which hatch in eight or ten days. The itching condition is an artificial dermatitis, sometimes developing into eczema, the eczematous condition depending on the extent of the traumatism. The intense itching, followed by scratching, results in the breaking of the skin and patch formation or scabs on the surface of the skin as a result. Found in those susceptible to eczema, a condition frequently contracted in contact with sheep in which it is frequently found. Generally termed scabies.

Treatment. (1) The frequent bathing of the skin with soap and water, particularly with K_2CO_3 soap. For the dermatitis or the eczematous condition the skin should not receive friction in drying. (2) Sulphur (flowers) ℥i drachmas in the or three ounces of lard is the best thing for the

itching, rubbing it over the affected parts, to be rubbed on both night and morning following the bath. (3) Every three or four days a sea bath should be used. In the process of healing the skin use lemon oil on the surface of the skin and the use of xaxax vapor bath. Alcohol or sulphur vaporized bath.

Pediculosis An animal parasite found on the head or different portions of the body, causing traumatism of the skin. They are small and are either white or black. Found under bad hygienic conditions. They live by sucking the blood from the skin producing minute hemorrhagic spots, which cause irritation of the skin and itching, with a tendency to scratch, that break the continuity of the skin. Use Euthycol paste and carbolic acid in turpentine to entangle and kill the parasite. Tincture Cocculus Indicus kills both parasite and egg.

Treatment. (1) Destroy the parasites or remove them, and

(2) Restore the skin to normal condition, after the parasites are destroyed.

(3) Have the patient use absolute hygienic methods, if they are in the hair cut it as closely as possible; shave it.

(b) Attend to the patient's nutrition, as there is nearly always a tendency to dermatitis or eczematous conditions, etc.

(4) Osteopathic treatment to the local parts affected to keep the skin thoroughly relaxed and to cause a kind of hyperemia of the skin. An old method was to use the blistering process to bring the blood to the surface.

(d) Use a naphthol soap frequently. Potash soap is excellent. When the pediculosis is found it is well to keep the surface well saturated with naphthol soap solution. Carbolic acid spray will also be good.

Vegetable Parasites.

Tinea Favosa. This is one of the vegetable parasites communicated to the human subject by contagion of some kind, i.e. contact. The parasite consists of small numbers of minute circular cup-shaped cups. It is yellow in color and found principally around the hair follicles, sometimes in the neighborhood of the nails and in the corneal layers of the epidermis. It is found principally in children of bad hygienic diet, etc. among the lower class of people, the cups representing minute vegetable growths. They begin

in very small pinhead points, gradually increasing in size for about fourteen days until they become elevated above the surface of the skin. Sometimes they are vulgarly called "sulphur points" on account of the color.

Tinea Circinata. Parasites also communicated to the human subject by contagion. Represents a fungus type consisting of irregular inflammatory patches on the surface of the skin; very frequently associated with ringworm. They are very contagious, sometimes found running through an entire family. Found especially in weak and poorly nourished people. The fungus develops between the layers of the epidermis, particularly between the upper layers of the rete portions of the skin. When the fungoid growth develops there is pressure on the epidermis sufficient to cause dermatitis, sometimes this goes on to exudation and papule and pustule formation. They begin in small reddish spots, coaly on the top, in a few days becoming ring shaped, contriving to increase in size until they spread over the entire surface. Sometimes their separate rings coalesce and form spirals. Found especially on the head and face.

Tinea tonsurana or Barbers itch. Parasitic contagious condition, found on the scalp or face, usually in the shape of patches. The principal characteristic is to cause the hair to fall out. Sometimes found in children, sometimes found with ringworms, very contagious. The parasite enters the hair, follicles or epidermis to be distended and producing fracture of the hair shaft and causing the hair to grow bristly, hard and without any elasticity. Begins in a very small patch, first as a vesicle later pustulating. It is usually circular, reddish, the hair follicles are thrown out on the surface. In some cases inflammation cedema, exudation result in localized skin field. When it is fully developed there are large pustules or reddish or purplish yellow, with great tenderness and itching, sometimes ulceration, followed by crustation.

Tinea Sycosis. Also a contagious parasitic condition affecting the hair, hair follicles and subcutaneous tissue. It is a fungoid growth and is frequently acquired through the medium of the barbers tools. The predisposing cause is a malnutritive condition of the skin. The parasite digs into the hair follicle and attacks the root, causing inflammation, sometimes suppuration and sometimes the formation of little tubercles which are very hard. Begins as a small reddish patch, followed by ---

- (a) Swelling;
- (b) Hardening;
- (c) Drying process, causing the hair to become brittle.

(d) Followed by the formation of nodules in the subcutaneous structures; representing the tubercle.

(e) These nodules frequently pustulate and the result is a deposit of a thick superficial crust which deprives the hair of its nutrition, the result being the breaking off of the hair, drying of the skin and there is intense burning and itching.

Tinea Versicolor. This is a contagious parasitic condition due to a small microbe. Deprives its name because of the variegated color produced on the surface of the skin, yellow being the predominating color. Found principally on the chest at or after the period of puberty and most commonly secondary to tuberculosis. Appears in the form of irregular dry pecks or variegated spots. It is a fungus growth and attacks the horny layer of the skin, differing from the other types in that it never attacks the hair. At first they are small in size, later a number of them coalesce and become scaly. In some cases they become almost black in color and when they have been present for a long time they will peel off the surface of the skin, leaving a seal raw surface.

Treatment of this condition. The predisposing cause in all cases is some constitutional debility or imperfect condition of nutrition, meaning either lack of assimilation or the assimilation of bad foods. The other predisposing cause is the unhygienic condition of the living.

(1) Attend to the building up of the system from the general nutrition and osteopathic treatment standpoint. This will apply principally to cause perfect nutrition and assimilation;

(2) In removing the parasite some strong camphorated preparation may be used, applied directly to the skin and then followed by the use of some pure vaseline to thoroughly saturate the skin;

(3) Attend to the probable diathesis of the syphilitic and scrofula. Are found in most of these cases where the susceptibility exists, using cod liver oil, olive oil, fresh air, exercise, etc.

(4) In removing the crusts use either olive oil or oil of ergot.

(5) Sponge thoroughly the part with a 30 or 40% solution of boroclyptol, or boroglycerine, etc. In severe cases it may be necessary to cleanse the skin by some zinc or oleate of mercury, to clear way the

growth of the surface of the skin;

(6) Do not use ster on the affected part. Give some type of treatment to establish circulation on the skin surface kneading, vibration, inhibition, etc. stimulation.

(7) In Tinea Circinata best local application is bichloride of mercury in equal part of alcohol and cologne water, about two grains of alcoholic solution or carbolic acid, 1 dram of the acid to one ounce of alcohol, used on the surface of the affected part, keeping the part as dry as possible, the alcohol will produce the evaporation. If there is any irritation on the surface of the skin use dry simple dusting powder;

(8) Tinea Tonsurans. Isolate the patient and use a 50% solution (alcoholic) of borax, applying this solution several times per day, or a boroglycerine solution with alcohol;

(9) Tinea Sycosis. Use 50% solution of boroglycerine or the oleate of copper, alcoholized, this being used to keep the copper from absorption into the skin, but sufficient to kill the parasite. To prevent the anesic condition of the skin, rub in olive oil and here take precaution in all the cases to rub in alcohol over the surface of the skin afterwards to keep the skin dry. This also tends to bring the circulation to the surface. Some treat the skin diseases by laying a cloth saturated with alcohol over the affected part until there is a hyperemic condition;

(10) Tinea Versicolor. Wash thoroughly with soap and water, using the oleate of copper, alcoholized then rubbing oil into the part afterwards and drying by the use of alcohol. In all these cases the treatments first quoted apply to all these types.

OSTEOPATHIC OBSTETRICAL MECHANICS

According to Levret parturition is purely a mechanical operation and to it he and others applied the principles of physics and mathematics. Although his extreme ideas have not been adopted generally, undoubtedly the mechanical element prevails in the field of obstetrics. From an osteopathic standpoint the mechanics of obstetrics represents the foundation of all obstetrical practice. If so, here we have a field of osteopathic technique that demonstrates the scientific nature of osteopathic practice.

Obstetrics is concerned essentially with four factors into which we may divide the subject, (1) The mechanics of the pelvis; (2) the body of the child to be delivered; (3) the force by which the delivery is to be effected; and (4) the passages through which the delivery must take place. As the body is a mechanism and as obstetrics deals with the anatomy and physiology of childbirth, it includes the mechanical principles to be applied in delivering a child, and should be considered from the mechanical standpoint.

(1) The mechanics of the pelvis. The pelvis represents an irregular osseous, wedge shaped cavity at the base of the vertebral column and above the lower extremities. In the adult we find the double os innominatum, the os sacrum and the os coccygis. The os innominatum after ossification represents a breadth between the anterior and posterior superior spinous processes of about six inches and a length from the tuber ischii to the iliac crest of seven inches. Each innominate represents three bones, which when ossification is complete meet in the acetabulum and symphysis pubis. (a) The ilium is triangular in shape and placed superiorly. The dorsal surface is convex and plane regular and forms the base of attachment of the glutei muscles. The ventral surface is concave and smooth and forms the base of attachment for the internal iliac muscle. The iliac base is thick and forms part of the acetabulum formation. The upper part of the body rises obliquely forward and outward to form the wing and then turns back to the crest. To its margin are attached the abdominal muscles, terminating both anteriorly and posteriorly, the former representing the anterior superior and inferior spinous processes with attachments for ligaments and muscles, and the latter representing

the posterior superior and inferior spinous processes. Lying between the posterior spinous processes is the sciatic notch, divided into two foramina, the superior forming a bed for the sciatic, gluteal and pudic arteries and the sciatic and pudic nerves; and the inferior forming a bed for the re-entrance of the pudic arteries and nerves in the pelvis.

(b) The ischium represents the inferior bone in the innominate formation, its body the inferior part of the acetabulum. Beneath this there is a narrow part in connection with which we find a spinous process posteriorly to which is inserted a part of the sacro sciatic ligament. Beneath it is enlarged in the formation of the tuber ischii, turning upward to form the ascending ramus. Externally it is rough, while internally it represents a smooth surface in connection with the pelvic cavity plane. (c) The pubis represents the anterior bone, the base forming the anterior portion of the acetabulum, projecting forward to form the horizontal ramus, meeting the opposite pubis at the symphysis pubis and completing the anterior pelvic boundary. At the inferior part of the symphysis the descending ramus passes to meet the ascending ischial ramus, forming one side of the pubic arch. The angle of curvature formed by these rami on either side will determine the size of the arch and obstetrically represent the lower point for passage of the child during delivery. On the inner side of the horizontal ramus we find the extension of the ilio pectineal line, close to the pubic terminal being a spinous process to which the inner end of Poupard's ligament is attached and close to it the pectineus and abdominal muscles. In the center of the ischium we find the obturator foramen which tends to make the osseous framework lighter, without sacrificing any of the strength of the apparatus.

The sacrum represents the termination of vertebral column, the lower vertebrae being ankylosed to form a solid posterior pelvic wall. In embryonic life there are thirty five osseous starting points, these at birth being reduced to five and in adult life closely joined together. It represents a triangle or wedge shaped bone, the base above and the apex below and projected posteriorly with a curved forward concavity. Vertically it measures about four and one half inches and transversely about four inches. It represents for

its size the bone with the lightest weight in the body. The upper margin represents the pelvic brim, the oval portion being broken by the sacral promontory. This represents the most important pelvic bone in normal and abnormal pelvic formations in connection with obstetrics. The coccyx represents the prolongation and termination of the sacrum. It represents four or five of the thirty-five embryonic osseous points which remain distinct in adult life and are movable with attachments of the small sciatic ligament and the ischio coccygeal muscle. Very much depends upon the mobility and the normal or abnormal direction of this structure, as to how the parturition process will take place. It moves superiorly, giving a mechanical increase of the antero posterior diameter of the outlet, the parts being completely mobile at the sacro coccygeal joint between the first and second bones. Where ankylosis takes place, the as it often does, there is thus presented a mechanical obstruction to free delivery.

In connection with the pelvis we find three jointures of considerable mechanical importance. The sacro iliac synchondrosis on either side represents an uneven surface on the posterior ilium and lateral sacrum surrounded by cartilage on each side, the jointure of the two cartilages being softer. In addition to this cartilaginous union of the bones we find the sacro iliac ligaments that cross both anterior and posterior and the sacro sciatic ligaments joining the sacrum and ilium to make the junction of the bones perfectly firm. Lying between the iliac ossa we have the sacrum, edged in with a greater internal transverse diameter than external, so that when pressure is brought to bear on it from within there is no danger of rupture. The symphysis pubis on the anterior of the pelvis is formed by the union of the pubic bones with the double fibro cartilage intervening at the junction. The weakness of the arthrodian articulation is compensated for by the pubic and sub pubic ligaments, representing intercrossing attachments from either os pubis to the other. Pare, Gardien and others claim that the pubic bones are, or at least may be, if necessary, separated during labor, the special jointure permitting of an increase in the antero posterior brim of the pelvis. The same thing is said to be possible at the sacro iliac joints. This may be in some cases, but, as Dewees points

out, the pubic bones would require to be separated one inch before any gain could be secured and this would involve the rupture of the sacro-iliac synchondrosis and the pubic ligaments, such as sometimes may be found in diseased pelvic conditions. It is undoubted that previous to parturition these joints are softened, the tissues are thickened and the ligaments relaxed. The result of these processes is to separate the bones so as to form a sacro-iliac hinge movement or a hinge motion of the symphysis pubis. When the ligaments become relaxed, the sacrum becomes capable of movement, permitting the movement of the sacro-iliac synchondrosis on either side with the symphysis pubis as the joint. This movement with the posterior yielding of the coccyx gives the greatest possible widening of the pelvic outlet. In this position as the pelvic articulations yield, the sacrum acts like a wedge between the innominate producing mechanically the symphysis opening.

The sacro-coccygeal jointure represents the ginglymoid joint, admitting of mobility, especially posteriorly in order to enlarge the lower outlet at least one inch. In order to maintain the jointure strength we find cartilage surrounding the articulating surfaces, the whole joint being enveloped in a strong capsular ligament. The pelvis is attached to the trunk by the sacral articulation with the last lumbar vertebra and to the lower limbs at the acetabulum and the hip joint attachments. The sacro-vertebral ligaments descends obliquely from the hip to the transverse process of the last lumbar vertebrae to the lateral portion of the sacral base; the ilio-lumbar ligament passes in a horizontal position from the tip of the transverse process of the last lumbar vertebra to the edge of the iliac fossa. The two sacro-sciatic ligaments prevent the misplacement of the sacral apex, partly closing the pelvic outlet and forming the structure of the pelvic floor.

In relation to the body the pelvis occupies a unique position. The pelvic brim is oblique, about 50 to 60 degrees between the plane of the brim and the horizon, so that in the erect posture the superior portion of the sacrum and the acetabulum are in the same descending plane. The lower pelvic outlet is also oblique, about 10 or 11 degrees between the plane of the outlet and the horizon. The tip of the coccyx is about seven lines higher than the top of the pubic arch, the

angle of the sacrum and vertebrae being about three inches and nine lines above the pubis, the sacro-vertebral angle between the sacrum and the vertebral column being 130 degrees. This obliquity of the pelvic outlet throws the axes of the pelvic cavity and the body trunk out of line with one another, meeting each other at an oblique angle, so that in normal conditions the female is prevented from having prolapse uteri or viscerae. In addition to this during pregnancy the oblique rotation of the pelvis to the body trunk prevents the gravitation of the uterus, especially in the later stages of pregnancy, into the pelvic cavity and also preventing the viscera from being mechanically pressed down - a condition of pressure often found in pathological conditions, producing urinary, intestinal and other "female troubles". Hence the necessity of maintaining the correct mechanical relations of the vertebrae and body trunk to the pelvic cavity, especially during gestation, if the maternal health is to be normal and the troubles of child bearing lessened.

The pelvis is divided into two by the ilio-pectineal line or ridge on the ilium and pubis marking the pelvic brim. These two portions are the superior and inferior pelvis or the false and true pelvis. The superior pelvis which lies laterally between the wings of the innominate has an obstetric importance only as it is related to the inferior pelvis, the former to some extent determining the size of the latter. From the inferior spinous process at the beginning of the iliac wing to the symphysis pubis is about four inches; from the inferior spinous process to the posterior iliac ridge following the hollow is five inches; from the top of the iliac crest to the pelvic brim is three and a half inches; from the superior anterior spinous process of the ilium on one side to the same point on the other side is ten inches; from the top of the iliac crest on one side to the same point on the other side is eleven inches; from the third lumbar vertebra to the top of the symphysis pubis is eight inches and if the body is erect this line ought to be perpendicular.

In the inferior pelvis the brim is represented by the ilio-pectineal line, oval in shape except at the posterior side where the sacrum projects, forming the promontory. In obstetrics this is of the greatest significance as it represents the first solid structure met with by the descending fetus, so that if there is abnormal diminution

at this point it will form an almost irremedial obstacle to free delivery. This becomes more significant when we remember that in the male the pelvic brim is more circular. Antero posteriorly from the promontory of the sacrum to the upper symphysis border is about four and one half inches; the transverse diameter perpendicular to the antero posterior at the widest part of the brim is about five and one quarter inches; and the oblique diameter from the sacro iliac synchondrosis to the upper and inner brim side of the acetabulum or the iliopectineal eminence is about five inches. This gives us a circumference of from fifteen to seventeen inches.

The pelvic cavity is bounded by the sacrum ischium pubes. Its depth to the sacrum and coccyx is from 5 to 6 inches, from the brim to the tuber ischii $3\frac{1}{2}$ inches and at the pubis $1\frac{1}{2}$ inches. In the male the pelvic cavity is deeper, the symphysis pubis being $2\frac{1}{2}$ to 3 inches and the sacrum more perpendicular. The antero posterior diameter from the third sacral vertebra to the center of the pubis is $5\frac{1}{2}$ inches, the transverse from the lower portion of the anterior border of the acetabulum to a corresponding point on the other side is $4\frac{3}{4}$ to 5 inches, and the oblique is $5\frac{1}{4}$ inches. On the inner surface of the pelvic cavity we find a series of smooth inclined planes, these planes being in two directions. (a) downward and posterior, and (b) downwards and anterior, giving the posterior and anterior inclined planes of the ischium, this facilitating the descent of the foetus. At the pelvic outlet we find an ovaloid opening, laterally immobile, but posteriorly capable of enlargement due to the mobility of the coccyx. The sub pubic arch has an angle of about 90 to 100 degrees, whereas in the male it is about 70 to 80 degrees, the antero posterior diameter from the pubic arch to the coccyx being four and one half inches, the transverse from the tuber ischii to the opposite one $4\frac{3}{4}$ inches and the oblique $4\frac{1}{2}$ inches. In the male the tuber ischii are closer together and also the acetabula. In the female wider separation of the acetabula gives to the two femora a more curved relation to the knees and the characteristic female movements of the lower extremities. The female pelvis is more slender and surfaces smoother.

By comparison between the pelvic brim and the pelvic outlet we find the direct reversal

of the measurements, this change from the shortest to the longest and vice versa taking place gradually in the cavity, the transverse diameter gradually lessening as the ischia approximate, while the antero posterior diameter gradually increases along the curve of the sacrum. This gradual change represents a semi spinal grooving in the cavity which materially aids in the descent of the foetus. This gives to the pelvis a peculiar direction semi curved following the direction of the sacrum and coccyx, very much likethe form of a switch back railroad from above downward, at that when projectile motion is begun the inclined planes and the switch back system facilitate delivery. The weight from above downward in connection with the descending foetus also aids in the forward movement from the pelvic brim to the outlet.

These measurements are modified by the soft parts lining the interior and covering the exterior, the osseous and ligamentous framework being filled in by so after tissues. The iliacus internus muscle in the shape of a fan occupies the iliac fossae, on the internal side of which and in relation to the brim we find the psoas muscle. these crossing the anterior portions of the brim to the point of insertion, forming a cushion to bear up the visceral organs and especially the uterus during pregnancy. Close to the internal border of the psoas muscle are the iliac vessels, the crural nerves and the lymphatics. Within the cavity are the internal obturator and pyriformis muscles with the sacral vessels and nerves, filling up the great sciatic and obturator foramina almost entirely, so that when contracted they aid in rotating the foetal head. Along the central part of the sacrum passes the rectum, behind and above the symphysis pubis the bladder, surrounded with fascia, membrane, etc. At the lower pelvic outlet we find on each side of the coccyx and sacrum the sacro-sciatic ligament, the coccygeal muscle, muscle fibres, fascia and cellular substance closing around the vaginal orifices. The perineal cavity is filled with the strong contractile tissues which act as a floor for the pelvis and abdominal viscera. As a result the transverse diameter is lessened without lessening to any extent the oblique diameter. At the pelvic brim the transverse diameter is diminished about half an inch, the antero posterior about one fourth of an inch; in the pelvic cavity the diminution is about one-

fourth of an inch. The lower orifice is completely closed except at the vaginal orifice, but on account of the elasticity of the tissues, there is practically no diminution in the antero-posterior diameter. The abdominal muscles are attached to the iliac crest, the external surfaces of the innominate attaching the glutei, pyraformis, internal and external obturator, superior and inferior gemelli and the quadratus femoris, so that the pelvic attachments are very strong in their relations to the trunk and the extremities.

It will be evident that the pelvis represents one part of the body mechanism peculiarly adapted to functional use. The mechanical arrangement of the parts in the female as compared with the male brings out this point. In the former not only is there the adaptation of muscle and bone for locomotion, but especially a peculiar adaptation to the function of generation and the organs concerned in this function. From this point of view the pelvis has a twofold function, (a) to protect the generative visceral organs from injury, shock and accident, and (b) to form the normal pathway for the delivery of the foetus, certain modifications taking place in anticipation of this event as the parturition period approaches. On the sacrum rests the trunk weight, just above the pelvic arch being located the mechanical center of gravity. Accordingly the weight is transmitted from the sacro-iliac joints, in the erect position, to the cotyloid cavities; and in the sitting position, to the ischial extremities. Thus we have the formation of a double arch, the cotylo-sacral and the ischio-sacral, the arch extremities being kept from outward movement away from the normal by the horizontal pubic rami and the common ischio-pubic rami. There is also the prevention of sudden shock to the pelvis and its organs by the sacral obliquity, the weight being thrown from the sacrum upon the cotyloid cavity through the media of the posterior ilio-sacral ligaments, the sacro-sciatic ligaments preventing coccygeal movement, and upward and posterior and the ilio-lumbar ligaments preventing the sacral base from moving downward and anterior. This is of great mechanical advantage in the support of the viscera and above the pelvis, the tendency for the uterus to gravitate downwards and backwards in the pelvic cavity being overcome. Hence the line representing the axis of the pelvic brim and the uterine axis lengthways would fall about the middle

of the coccyx, so that the pelvic floor represents a solid support to the visceral organs. In the development of the sub-pubic arch and the extreme narrowness of the symphysis pubis in the female, there is rendered possible the formation of the widest arch extension in connection with labor, to assist in the parturition process.

The importance of this may be illustrated. If the lines representing the two planes of the pelvic brim and the pelvic outlet be projected anteriorly in front of the symphysis pubis till they meet at an intersecting angle, and if from the point of intersection a number of radii be drawn to the sacro-coccygeal wall of the cavity the parts of the radii lying inside of the pelvis will represent the plane of that part of the cavity through which the radii pass. By drawing a line through the geometric center of each of these planes, we get the curved line in the form of a parabola representing the true pelvis. By the rotation of the coccyx during parturition altered planes will be formed to give the parabolic curve representing the parturient pathway, so that the normal curve which keeps the part in position up to parturition is changed into the parturient curve that facilitates delivery. The direction of the canal in the parturient process depends on the modification of the soft tissues. The soft parts represent on the pelvic floor the continuation of the pelvic canal. The canal narrows and the perineum are distended. The posterior vaginal commissure being forced down and forward, so that the child moves forward in a curved parabolic line under the pubic arch in front of the symphysis, the curved movement assisting in its delivery. This, you will see, takes place on a purely mechanical basis in connection with the mechanical structure of the pelvis.

(3) The mechanics of the body of the child to be delivered. The body of the child may be regarded as entirely passive except in so far as its weight and the plastic nature of the body and its encompassing fluids and membranes assist in the process. The size of the head has an important bearing upon the delivery as it passes through the pelvic canal and when the head has safely passed little difficulty is found in delivering the other parts of the body. The most solid and perfectly developed part of the head is the base of the cranium, the imperfect ossification of the rest of the cranium above, with the sutures and fontanelles, admitting of compression. The occipite-frontal diameter, which

is the long diameter from the frontal eminence to the occiput, representing the most important diameter as the occiput passes to the pelvis before the fontal part and is about four and one-half inches. The longitudinal diameter of the head, corresponding with the oblique diameter of the pelvic brim and the antero-posterior of the outlet, is four to four and one-half inches. The transverse or bi-parietal corresponding with the antero-posterior diameter of the pelvic brim and the transverse of the outlet is three and one-half to four inches. The occipito-mental corresponding with the antero-posterior diameter of the outlet in face presentations is five and one-half inches; the cervico-bregmatic is four to four and one-half inches and the trachelo-bregmatic three and one-half to four inches; the inter-auricular diameter is three and one-half inches. The circumference of the occipito-parietal presenting ring passing around the parietal bones to behind the bregma is about eleven and one fourth or twelve inches. The transverse diameter of the child at the scapulae is about five to five and one-half inches and the transverse diameter at the pelvis externally four or five inches. These diameters are perpendicular through the longitudinal diameter of the head, so that if, as in ordinary cases the latter corresponds to the antero-posterior outlet diameter and the two former will correspond with the longest pelvic brim diameter. In normal cases we see that the diameters of the pelvis correspond with the diameters of the child body to be delivered. But even in normal cases there is capacity for adaptation that tends to aid in delivery.

The child head is not an absolutely solid structure, but is capable of compression and the child body is also capable of compression, so that even when the antero-posterior diameters of the brim is lessened passage is possible under compressible conditions. In addition to this the passage of the child body is facilitated by the fact that the child head passes into, through and out of the pelvic cavity in an oblique direction both longitudinally and transversely. This throws one of the fontalles and the max anterior portion of the part represented on a lower plane than the opposite fontanelle and the corresponding part on the opposite side, tending to diminish the size of the head and the body in passage. The longitudinal axis of the child body generally corresponds with the longitudinal axis of the uterus, although in a few cases there is a certain obliquity between the two axes.

According to the earlier writers on obstetrics the head passes through the pelvis with its long diameter antero-posteriorly in the pelvis, maintaining the same position in the cavity and at the outlet, no mechanical laws or principles being applicable, as in this process. Later writers have demonstrated the obliquity of the head, in relation to the pelvis, the long diameter of the head occupying the transverse diameter of the pelvis and the long diameter of the head rotating at the pelvic outlet into the antero-posterior diameter, according to Smellie. This then is a definite relation between the pelvis and the head of the child during the entire period of its passage through the pelvic canal. The modern doctrine is that the foetal head in passing into the pelvis does not occupy a position exactly corresponding with the transverse or antero-posterior diameter of the pelvis but obliquely between the two, most frequently occupying the right oblique position in relation to the sacro-iliac synchondrosis. In this position there is a slight rotation of the head but there is never complete rotation of the head into the hollow of the sacrum. Along with this rotation and as a mechanical assistance to delivery the head assumes in its passage through the pelvis a bi-parietal obliquity, bringing in approximation the corresponding ear and upper shoulder by the rotation of the head on its occipito-frontal axis. Naegele is the principle demonstrator and defender of this mechanical doctrine, basing it on mechanical principles. Leishman refuses to accept the doctrine of bi-parietal obliquity, claiming that on account of the obliquity of the pelvic brim the head must enter the pelvis almost directly in the pelvic brim axis.

Presentation refers to the relation of the longitudinal axis, the differential kind of presentation depending on the part of the foetal body presented at the os uteri, according to which there may be in normal labor five kinds of presentation cranial, facial, breech, knee and footling. As the cranial type represents a large majority of cases and as the head represents the principal point in delivery, we will take them as illustrations of the mechanics of parturition.

What determine cephalic presentation? The shape of the uterus is ovaloid and to it the foetus is adapted, even from an early embryonic period. As the parturition period approaches, the foetus assumes the attitude of forward curving from the vertebrae, the chin being directed to the ster-

num, the knees with the thighs bent upward on the abdomen and the arms bent down and crossed on the thorax. In the majority of cases the head inclines toward the cervix uteri, this inclination originating in the embryonic oval shape of the foetus and the uterus. According to Dr. Matthews Duncan gravitation as a physical force accounts for cephalic presentation. According to Simpson the presentation depends on a series of reflex movements, these same reflex movements keeping the foetus in position until ready for birth. Possibly both of these causes combine to represent physical and physiological laws that determine the normal presentation.

The position of the head during delivery is determined by its relation to the different diameters being compared with the oblique diameter of the brim, there two representing the fixed points in connection with the head and the cavity. In the head the points of importance are the anterior and posterior fontanelles in connection with the vertex, the occiput and frontal eminences in connection with the occipito-frontal diameter: in the brim the points of importance are the right and left obturator foramina and the right and left sacro iliac synchondroses. Kaegele laid it down that the presentation of the head at the brim may be found in four positions, the occipito frontal diameter of the head entering the pelvis either in the right or left oblique diameter with the forehead backwards or forwards and the occiput forward or backward. (a) The head in the right oblique diameter, the posterior fontanelle corresponding with the left obturator foramen, the occiput anterior and the forehead posterior. (b) The head in the left oblique diameter, the posterior fontanelle corresponding to the right obturator foramen, the occiput anterior and the forehead posterior. (c) The head in the right oblique diameter, the posterior fontanelle corresponding with the right sacro iliac synchondrosis, the occiput posterior and the forehead anterior; and (d) the head in the left oblique diameter, the posterior fontanelle corresponding with left sacro iliac synchondrosis, the occiput posterior and the forehead anterior.

(a) Above the brim the head generally occupies a transverse position with the face to the right. Here the head presents in a right oblique position, the posterior fontanelle corresponding with the left obturator foramen, the center of the

occiput being directed towards the left ilio pectineal eminence and the anterior fontanelle corresponding with the right sacroiliac synchondrosis. At this point the two fontanelles will be level, the sagittal suture lying in the oblique brim diameter, slightly nearer the sacrum than the symphysis pubis. As the occipito frontal plane is oblique, the occiput passes before the forehead and by the bending of the neck with the chin resting on the sternum, the propelling force from behind has a greater effect on the delivery of the child, the force being communicated along the spinal column to the occiput along the curved vertebrae line. As the uterus contracts the head is thrown through the brim into the pelvic cavity, in some cases the oblique direction of the head being maintained as at the brim, in other cases modified in relation to the longitudinal axis, the anterior fontanelle being generally slightly raised, while the posterior fontanelle still corresponds with the obturator foramen. The movement is not exactly in the line of the axis of the pelvic canal but is slightly posterior till it comes into contact with the resistances offered by the plains of the ischia as they gradually approximate. At this point the head is rotated, the antero posterior diameter of the head being almost in line with the anterior posterior of the pelvis, the occiput being directed to the sub pubis and the forehead to the sacral hollow. But for this rotation of the head, it could not pass through the outlet. Older writers ascribe the rotation to the action of the internal pelvic muscles. It is due to the resistance offered by the pelvic floor.

As the head in its descent in the right oblique diameter reaches the pelvic floor the occiput is in front of the left ischial spine and the forehead behind the right ischial spine. Hence the occiput cannot rotate backward and the forehead cannot rotate forward. As the force of propulsion comes from behind the occiput passes downwards and forward along the inclined planes of the anterior and inferior ischial spine and the internal obturator muscle, the forehead following the plane marked out by the sacro sciatic ligaments into the sacral hollow. Thus the spinous processes of the ischia form the internal rotating surfaces of the pelvic screw in connection with which the head is rotated towards the outlet; the occiput of the foetus guiding the movement in the anterior plane while protecting the softer structures. As this rotation takes place the vertex of the foetus passes to the pelvic floor, meeting the softer tissue structures,

the head changing its position as the chin is raised from the sternum, the anterior point of the occipite-frontal diameter descending and therefore preceding the posterior point, this again being reversed in oscillation due to a reflected force. The head now follows the vaginal axis downward and forward almost at right angles to the previous movement, the mechanical pressure on the perineum and coccyx enabling the head to follow the sacral curve. Following this we find the movement of extension after the occiput has passed upwards in front of the symphysis pubis, the occipital pole being born first both upward and forward.

As the head reaches the outlet of the pelvis the uterine contraction increases the pressure forward, the movement taking place gradually in connection with the posterior or fontanelle from left to right and from above downwards, while the occiput passes under the pubic arch, the posterior and superior position of the right parietal approximating towards the os externum and retaining this position till freed from the pelvic outlet. Thus the passage of the head takes place obliquely through the internal and external parts. Thus at birth from the pelvic outlet there is obliquely and according to Naegle also a bi parietal obliquity, the right parietal eminence being born before the left. As soon as the head is born the face is turned normally to the right maternal thigh, as the shoulders descend behind the head, in order that the anterior shoulder may pass under the pubic arch and the posterior into the sacral hollow. As soon as this rotation of the shoulders has taken place the delivery of the rest of the body takes place under simple mechanical principles along the canal of dilatation produced by the head and shoulders.

(b) Here the head presents to the left oblique position, so that when the head enters the pelvic brim, the posterior fontanelle corresponds with the with the left sacro iliac synchondrosis and the occiput towards the right ilio pectineal eminence. Hence the left side of the head, presents, instead of the right as in (a), the sagittal suture corresponding with the left oblique diameter. The long head diameter this correspond with the right oblique pelvic diameter, the head occupying an oblique position in the pelvic brim, with a changing oblique position and gradual movement with slight rotation from right to left. The occipital pole in the antero posterior or diameter of the head passes

and as it advances distension of the labia is produced passing through the external outlet in the same position as in (b).

As the pressure is transmitted along the spinal column the occiput is driven down, the forehead raised and the chin rested on the sternum. As the forehead rises above the ischial spine rotation takes place, the occiput being under the right spine, passing down and forward on the right side in connection with the sacrum, coccyx and sacro-sciatic ligaments. The forehead when it meets the posterior ischial plane moves toward the left sacro iliac synchondrosis to complete the rotation. If the forehead still descends there is danger of the long occipito frontal diameter being placed across the pelvis, in which case the rotation into the position of (b) is difficult. If the forehead continues to descend until the anterior fontanelle approximates the ostium vaginae, throwing the head into a fronto crotaloid position, the likelihood is that delivery will take place with the forehead in advance, the perineum becoming distended very widely by the posterior portion of the head. The only danger in this case is that of perineal rupture. The movement forward is somewhat upward with a marked head extension in order to bring the forehead, face and chin under the pubic arch so as to facilitate the rotation forward of the head to complete delivery.

(d) The head presents in the left oblique diameter, the posterior fontanelle and occiput corresponding with the left sacro iliac synchondrosis and the anterior fontanelle and forehead with the right obturator foramen and ilio pectineal eminence. In the passage of the head through the pelvic cavity similar changes take place in the opposite direction to those described under (c) the rotation of the head being from left to right, so that the posterior fontanelle approximates to the left obturator foramen, putting it into the position occupied in (a) during the passage through the external outlet. Here the head occupies a difficult position, causing the rotation to be slow on account of the obstruction offered in the obliquity by the presence of the rectum. Aside from this obstruction this position represents the converse of (c) and may terminate either with the occiput or forehead in advance. If the occiput descends first it passes under the right ischial spine, rotation taking place as in (a) the right side of the head being below the level of the left, the occiput passing out under the pubic arch.

If the forehead descends it will pass under the

pubis, as it moves backward and downward behind the symphysis pubis. In order to overcome the obstruction offered by the rectum in the left obliquity the rotation of the head takes place before the descent to the pelvic floor, high up in the pelvis, so as to prevent the forehead descending and requiring to rotate at the low level of the pelvic floor.

In case of a large pelvic cavity or a small foetal head the change of position from (c) to (b) and from (d) to (a) does not take place on account of the absence of resistance, so that the delivery at the external outlet will take place in the same form as the brim presentation, the forehead being forward and upward.

We have seen that the mechanics of the pelvis and of the foetal head correspond in normal conditions, to such an extent that natural labor may be regarded as depending entirely upon mechanical principles. The mechanical principles of the plane, the screw, the axial curve, rotatory movement, etc., are well illustrated in connection with this subject, nature providing for a series of adaptations to meet the exigency in the combination of all these principles. The modification of these in relation to physiological activities will be ligamentous and nervous systems.

(3) The passages through which delivery must take place. The pelvic brim diameters, we have seen, are, antero posterior $4 \frac{1}{2}$ inches, transverse $5 \frac{1}{4}$ inches and oblique 5 inches. In the pelvic cavity there is gradual change in these diameters until we find at the pelvic outlet the reversal of the measurements the antero posterior becoming 5 inches, the transverse 4 inches and the oblique $4 \frac{1}{2}$ inches, so that the longer diameter at the brim has become the shortest at the outlet below. In order to cover the soft tissues of the pelvis we must deduct about $\frac{1}{4}$ inch from the antero posterior and $\frac{1}{2}$ inch for the transverse diameters. In addition to this the pelvic axes are changed so that the brim axis is upward and forward, the lower outlet axis downward and forward, the two axes making an obtuse angle. Side by side with this we have the principles of the inclined plane, the planes being both downward and backward and downward and forward in connection with the ischial planes.

In connection with the delivery of the child these have an important bearing. The diameters of the child's head in passing through the cavity correspond only with certain diameters of the passage so that as these pelvic diameters change the child's head must alter its position in order

to become adjusted to the movement in passing through the cavity. As the axes change in connection with inclined planes the head must move forward in a definite direction changing from the axis of the pelvic brim to the axis of the pelvic outlet.

In order to adapt these movements to the changes in the diameters and axes the head must be of the same size as the pelvis - diminished size of the head would cause it to pass without any mechanical resistance and therefore without changing according to the changes in the pelvic cavity -- increased size of the head on the other hand would entirely prevent its passage.

The uterus represents the first part of the passage for the child body. Normally the long axis of the body corresponds with the long axis of the uterus, the latter prior to parturition is almost at right angles to the brim axis. In order to bring the uterine axis into line with the brim axis it is necessary to depend upon uterine contractions, these contractions as soon as they begin throwing forward the uterine base so as to bring it into perfect line with the pelvic axis, thereby preparing for the entrance of the body into the pelvic cavity. If this variation between the axis of the gravid uterus and the axis of the pelvic brim did not exist the child could not be held in utero.

As the head of the child moves forward it meets with two impediments to its progress.

(a) The narrowed lower end of the uterus, the cervix uteri. This resistance is due partly to muscular and partly to the elastic action. The primary dilatation is produced by continuous mechanical stimulation and after this has been carried to a certain point the dilatation is completed by muscular action. Towards the close of the period of pregnancy prior to parturition there is a softening of the lower end of the uterus and this produces partial dilation, so that as soon as the uterine contractions begin the child body is raised and drawn back slightly, while the membranous sac filled with the liquor amnii is pressed down. As soon as the sac has passed and the head of the child takes the place of it, the cervix fibres contract and gradually retract until the force of the head communicated from the uterine fibres of the body and fundus and the retracting force of the os uteri drive the head through the cervix. (b) A second impediment is met with in the osseous structure of the pelvic brim. The head can enter this only by adjusting the head diameters to the brim diameters and by the compression of the head so that they may

exactly correspond with the brim size. At this period the head occupies an oblique position, either right or left, the propulsion taking place in a screw direction, till it passes to the lower pelvic outlet. Here the resistance of the soft tissues, consisting of muscle, ligament, etc., is overcome by a lubricating mucus which helps to soften them the mechanical pressure of the head causing relaxation and contraction at intervals until the soft tissues yield to the forward force of the child body.

Thus in the delivery of the child the obstetrical cavity is represented by three passages, corresponding with the labor stages. (a) from the upper end of the uterus body to the os uteri, (b) to the pelvic brim, and (c) to and through the lower pelvic outlet. The resistance that is offered depends upon the maternal condition also the condition of the child head and body. In the first stage the resistance is less; during the second stage it will depend upon the force imparted to the child body by the uterine contractions and also upon the possibility of compressing the head; for example, as in cases of sutures ossification where the resistance is very great.

(4) The force by which delivery is effected, The principal force is represented by the uterine contractions and in some cases it is the only force, as in maternal syncope or death before parturition.

In the uterus we find a muscular characteristic. It is a pyramidal hollowed viscus, somewhat of a flat pear shape, flattened from before backwards, the flattening anterior and the rounding posterior. Its length from the border of the lip to the fundus is 3 inches, its breadth between the fallopian tube insertion $2\frac{1}{2}$ inches, the beginning of the body portion is one and one quarter inches broad and one inch thick; the wall is about half an inch, the cervix as it projects into the vagina is about one and one eighth inches thick and one and a quarter inches broad. According to Levret the superficies is 16 inches and the cavity three fourths of a cubic inch. The os uteri is at the lower end of the cervix, the canal of the cervix being about three fourths of an inch leading from the os, widening and then contracting to form the os internum. The uterine cavity is triangular, the base being upward. The uterus thus consists of a fundus, rounded in cases of previous childbirth, two lateral borders, an anterior surface and a posterior convex surface.

There are three distinct coatings; (a) the peritoneum covers it anteriorly and posteriorly representing the serous coat, the lateral reflection to the pelvic sides at the sacro iliac synchondroses in connection with the broad ligaments

of the uterus assisting in the support of the uterus in the unimpregnated condition. This peritoneum extends across the pelvis from side to side, forming a double layer at the center of which is the uterus. The broad ligaments and the uterus form a septum dividing the pelvis into the anterior and posterior, in the former of which is the bladder and in the latter the rectum, the larger part of the uterus being thrown into the posterior cavity. The broad ligament keeps the uterus from being displaced down and retains it centrally in the pelvic cavity, allowing free anterior and posterior movement in connection with the bladder and rectum. Between the broad ligament layers we find the round ligaments, consisting of a mass of muscle fibres about 5 inches long, bound into a bundle, passing on either side from the uterus angle, upward and outward then forward and inward to the internal inguinal ring, passing through the inguinal canal to the mons veneris. The one on the left side is longer and thinner, hence there is a freer play of the uterus from the left side.

(b) The middle coat is muscular, consisting of fibrous structure, reddish yellow in color, very visible, at least in the gravid uterus, into fibre sets. The outer set represent a very irregular appearance, due to the interlacing of the fibres, although they are directed from the fundus to the cervix. The deeper sets are regular, giving a circular layer around the fallopian tube orifice and around the os uteri, while another layer diverges anteriorly and posteriorly with straight bands of fibres directed to the os uteri. The uterine tissue forming the uterine walls is very thick and dense, being the thickest the center of the body and at the fundus. These consist of fibres of smooth muscle tissue, mingled with fibro areolar tissue, especially on the superficial surface. The external fibres are longitudinal and the internal circular, at least this differentiation becomes distinct during the thickening of the pregnancy. There is a well marked band of circular fibres around the uterus at the level of the os uteri internum and around the fallopian tubes as they enter into the uterine cavity. These are of special value in abnormal cases of labor, especially when a surgical operation is necessary.

(c) The lining membrane of the uterus is of a mucous type, continuous with the mucous membrane of the vagina, after covering the cervix uteri. It represents the thickest mucous membrane of the body, within the uterine cavity being about one fourth of the thickness of the walls, becoming thinner in the

cervix from the os internum. In the cervical canal it is found in a number of folds, while in the uterine cavity it is smooth, covered over with small tubular glands that project through the membrane at right angles to the surface. This mucous membrane is altered after impregnation in the formation of the decidua covering of the ovum.

At the period of parturition the muscular fibres are shortened and become thicker, and as all the fibres take part in this contractile process the uterine cavity is lessened, with periodic relaxation, giving the cyclical character to the pains of contraction that come on periodically and are so important in the obstetrical field. The beginning of these contractions is found in the cervix, previous to the real period of delivery, because at the earliest period of delivery the os uteri is at least slightly dilated, this dilatation having taken place without any consciousness of pain. The pains of labor are usually divided into two classes, (a) the acute pains of a griping character, shooting from the loins across the abdomen and into the thighs, produced by the sudden dilatation of the cervix and other passages and the pressure of the muscle fibres upon the nerve fibres; (b) the delivering pains which consist of uterine contractions, assisted by voluntary effort in the attempt to bear down the child through the obstetrical cavity. In connection with the contractions we notice a distinct cyclical character, (a) beginning with slight contraction, (b) slowly progressing towards a maximum of contraction, (c) with a diastolic pause at the maximum, and (d) the rapid relaxation. This is true not only of the individual contractions, but also and especially of the series of contractions, slight to begin, gradually increasing in force and frequency, with an appreciable pause between the contractions, gradually diminishing as the contractions become stronger and more frequent, then attaining the maximum when delivery takes place. This represents the cyclical periodicity, or uterine rhythm, of the contractions, each one separated from the next following by a distinct period of rest.

The purpose of these contractions is twofold, (a) to raise the part of presentation, and (b) to force it along the path of delivery. Hence the contraction begins in the cervical part and then pass to the body and fundus of the uterus. During the contraction of the uterus becomes stiffened and is changed from elongation to a rounded shape, the fundus being thrown forward. In the early stage the uterine force alone is brought into play; later

the abdominal muscles, aided by the depressed diaphragm, exert an additional force upon the uterus by lessening the abdominal cavity and increasing the uterine contractions.

The cause of the initiation of the parturition movements has given rise to such difference of opinion. According to antagonistic action between the muscles of the uterus body and those of the cervix uteri keep the body and cervix in normal relation to one another, until by the development of the embryonic body dilatation of the cervix takes place causing the body fibres to be stronger in action and therefore capable of producing contractions from the body towards the cervix. According to Dubois the stimulation of the cervix gives rise to nervous impulses which in turn produce reflexly parturition, as the cerebro spinal nerves transmit the impulses back to the cervix as motor impulses and through the cervix to the body of the uterus. According to Brown Sequard the uterine contractions are stimulated by an excess of venous blood in contact with the muscle fibres, as those fibres become very irritable towards the end of the period of gestation. There is a large quantity of venous blood determined to the uterus, according to him, by the size of the venous sinuses, so that the excess of blood and the excessive irritability of the muscle fibres reach a maximum, emptying and filling of these sinuses being coincident with contraction and relaxation during labor.

According to Thenen (Weiner Klinische Wochenschrift) the initiation of gestation and birth depends upon the reaction of the maternal organism to the stimulation arising from the fecundation of the ovum. This reaction represents the checking of the normal contraction of the muscle fibres by the changes taking place in the uterus. The maximum of placental development is reached about the thirty fourth week as the blood passes through it is appropriated by the foetus the placental development ceases and the placenta begins to degenerate. At this degeneration of the placenta proceeds, the degenerated placenta presents an impediment to the previously existing close relation between the mother organism and child organism, with the result that by the stimulation of the uterus to its normal physiological contraction the foreign body is expelled. When a nutritive purpose can no longer be served by the placenta, it gives rise to an expulsive process to unload that which has become a load to the uterus. The placenta takes the blood of the mother for the purpose of forming and sustaining a new being.

When this is accomplished the muscles and nerves of ejection thrown out that which has come to be an irritant. In proof of this he claims that anything which tends to sever the vital relation of the maternal organism and the foetal organism will act as a producer of premature childbirth. According to this the stimulation will be mechanical, arising from the fact that the child body has been fully matured and has lived as long as it can upon the nutritive supplies carried to it through the intermediate placental membrane.

When stimulation has been generated sufficient to arouse the latent forces, then the muscular contractions of the uterus begin. The sensory nerves of the uterus take this stimulus and carry it to the nerve centers, these nerve centers sending out sufficient motor impulses to drive out the child. These muscular contractions represent the inherent rhythmic power of the uterine muscles. They are not dependent upon volitional stimulation as is evident from the loss of such volitional impulses in cases of anaesthetization and in cases of postmortem childbirth. Undoubtedly volitional and emotional stimulation may give rise to or cause the inhibition of the uterine contractions; but in these cases it is simply a psychic acceleration or inhibition of the normal uterine rhythm. This indicates that the uterine contractions are automatic and reflex. In this the spinal cord exercises a prominent part, the motor fibres to the uterus being stimulated from the uterine contractions are automatic and reflex. In this the spinal cord exercises a prominent part, the uterine center in the lumbar spine. Abnormal effects are found by variations in the blood circulating in the cord, such as toxic elements. The reflex center of uterine peristalsis in the lumbar cord, for example, stimulation of the mammary nipple, irritation from the stomach, rectum, ovaries, etc., may produce uterine contraction.

The nerve fibres like the muscle fibres of the uterus seem to pass through considerable changes during gestation. Just as the muscle fibres enlarge, the nerve fibres also become enlarged, chiefly the neurilemma. Branches from the sacral nerves pass directly to the os uteri and the cervix uteri and thus form the direct path from the cord to the uterus, plexuses being formed around the os and cervix, these plexuses being reinforced by nerve supply from the cerebro spinal and sympathetic systems, minute nerve distribution taking place to the body of the uterus from these plexuses. As the impulses are distributed to the body of the uterus peristaltic movement is generated in the form of rhythmic waves. The beginning of the contraction is found in the neck

of the uterus. As it becomes tensely contracted, the contraction spreads towards the fundus and then goes back to the os, giving what Wigand calls, a double action "diastalsis" and "peristalsis" the combination of which produces expulsive action. These actions depend upon at least for regulation the automatic and reflex impulses sent down from the cord through the lumbar nerves and the sympathetic ganglia and fibres, and also directly through the sacral nerves terminating in the os and cervix plexuses. Thus the nerve supply to these organs in the pelvis cavity is from the lumbar and sacral regions of the cord and through the hypogastric plexus from the lower dorsal. Hence the regions to be carefully examined in connection with the uterine conditions bearing upon parturition are, the ninth, tenth and eleventh dorsal, first, second, third and fifth lumbar, and the second and third sacral nerves, the vertebrae, muscles and ligaments being carefully examined and at the same time the lumbosacral articulation.

As accessory to the great inherent force of uterine rhythm we must take account of the voluntary muscles, chiefly the diaphragm and the abdominal muscles in connection with the fixation of the chest in expiration; they are brought into play in conjunction with the muscles on the pelvic floor and the vaginal wall muscles, representing a double reflected force that may be used in subordination to the uterine action.

In the parturition process three stages have been distinguished. (a) towards the close of gestation the uterus gravitates downward, the head having descended pelvisward. The ligaments relax somewhat and the articulations become loosened. This is accompanied by the first uterine contractions, beginning in the muscle fibres of the cervix and extending to the fundus, followed by a period of relaxation and rest, contraction and relaxation alternating as we have already stated. As these contractions multiply there is a cumulative effect produced, the final result of which is the dilatation of the os. This dilatation takes place by successive stages, first a slight dilatation; then the dilatation in connection with the membranes and the liquor amnii, the fluid contained in the pouch providing most efficient mechanical means of dilatation with fluid pressure, acting upon the entire circumference of the os at the same time. In addition to this, the fluid medium acts as a preservative of the descending foetal head guarding against

benormal pressure, a soft cushion being thus presented against which it may rest, so that as the further dilation of the os takes place recession of the head takes place and the membrane takes its place gradually descending to be followed by the head as dilatation proceeds. Still further dilatation is aided by the rhythmic contraction of the longitudinal fibres, pulling up the margin of the os while the membranes are being driven downward, so that one mechanical force pulls up while the other pushes down, and in this way the sphincter muscle fibres are overborne and relaxed. As soon as the dilatation is sufficient to permit the descent of the head the rupture of the membranes follows so that with the dilatation of the os the first stage ends. Frequently when final dilatation of the os takes place suddenly there is a sudden spasm due to the quick dilator effect overcoming the inhibition of the circular sphincter fibres. This is a mechanical reaction from the progressive contractions and relaxations.

(b) When the os is fully dilated, the uterine muscles seem to circle tightly around the foetal body in order to complete the delivery. The contractions multiply in number and increase in force. At this stage if the patient is conscious, voluntary effort is made to increase the force of the contraction by the action of the voluntary muscles. If the os still continues rigid, as the head has lost its soft cushion, there is liable to be pressure upon the head and an oedematous condition may be found called the caput succedaneum. With the yielding of the os, there is presented a continuous parturient canal from the fundus of the uterus to the ostium vaginae and all the force of voluntary and involuntary action is used in connection with suspended respiration and muscle fixation to aid in expulsion. Here the pelvic floor muscles and the vaginal wall muscles aid in propulsion, the strain of these muscles originating sensory stimuli carried to the expiratory and abdominal muscles and through them as they are conveyed to the muscles may increase the uterine force driving the body forward. As pressure is brought to bear upon the perineum it is forced downward and preparation is thus made for the birth of the forward presenting part, while the rectum is flattened, aiding in the distension of the perineum. With this distension and bluing of the perineum there is a downward and backward movement of the presenting part, until the head passes forward beneath the pubic arch, to be delivered as the contractions become more forceful. If the head and body of the child are large, it will

be necessary to support the perineum by the hand, pressing the soft tissues against the perineum away from the symphysis. In doing so the body can be materially aided in its passage through the vaginal canal. After a period of contraction, the external parts become dilated again in the delivery of the shoulder that lies nearest the perineum, delivery of the rest of the body being completed after this with ease.

(c) The last stage represents delivery of the placenta, the uterus having contracted strongly upon it at the close of the preceding stage. The contractions of the uterus separate the placenta and force it into the vagina, through which it passes either in normal position or inverted, in the former case, the margin of the placenta presented, and in the latter case the amnionic or foetal surface presenting. This completes the parturition process. Should the placenta delivery be delayed, slight and sudden torsion of the cord in a rolling manner, with steady abdominal pressure above the pelvis with the hand may aid in freeing it from the uterus. After the delivery of the placenta through the abdomen, with a slightly irritating manipulation over the symphysis, to aid the contraction of the blood vessels and the uterus contraction so as to close the sinuses and prevent hemorrhage.

In dealing with obstetrical causes, when the pains in the back begin, if the os uteri is still closed, it is necessary to free the blood circulation in the pelvic cavity, by placing the patient on the right side, as the uterus is inclined more to that side, thus relieving the strain, and slightly lifting the viscera so as to open the circulation of blood through the pelvis. At the same time any tension of the nerves at the pubis or in the sacrum should be relieved so as to give a free nerve path for the motor (contraction) impulses from the spine to the uterus. As dilation of the os begins and proceeds, the same method should be followed in order to relax the nerves at the pubis and the sacrum and to free the nerve path.

In cases where the pain is excessive, mechanical inhibition may be brought to bear upon the clitoris locally, and upon the spine on either side of the vertebrae in the lower dorsal region and in the fourth, fifth and third lumbar regions. If the contractions of the uterus are retarded, stimulation may be applied to the lumbar spine while the uterus may be aided in its projection into the vagina by the inhibition of the round ligaments in the pubic crest region, this relaxation being promoted by an inhibitory treatment over the symphysis pubis.

It was not ur purpose to discuss abnormal conditions or to take up the minute details of obstetrical practice. Our attempt was to demonstrate obstetrics on a purely mechanical basis. We have points out the mechanical factors and principles found in the pelvic cavity, in the parturient canal and in the muscular, ligamentous, articulation and neural appendages, so that by the application of physiological physics obstetrics may be studied and practiced entirely from an Osteopathic standpoint.

The discussion of the subject of obstetrics presupposes a knowledge -

a The anatomical structures of the organs;
 b The physiological and physical discussion of the subject labor. Labor in this sense is the process by which a foetus with a life capable of becoming immediately independent, is separated from the maternal organism. This represents a physiological terminus of the period of pregnancy.

c Pathological conditions in the obstetrical field represent --

1. Abnormalities in presentation.
2. Abnormalities in the structure of the parturient canal.
3. Abnormal conditions in the process of parturition proper.

These are the three fields for discussion aside from the anatomical discussion.

SIGNS OF PREGNANCY.

1. Cessation of menstruation.
2. That is called "morning sickness," which represents-
 - a Either vomiting or a tendency to vomit in the morning, following by the loathing of food. In severe cases this continues the greater part of the day. It is an abnormal condition and should not be present. This sickness lasts, when found, from about the sixth week, and may last until the seventh month. In most cases it indicates (a) a reflex irritation of the stomach, or, (b) a type of uterine indigestion, called uterine because the reflex is from that field. In treating this condition --
 - (1) give inhibition upward along the spine, (2) followed by gentle articulation of the spine, also upward; (3) rhythmic treatment at the 4th and 5th dorsals with an elevation of the 4th and 5th ribs
 - (4) In some cases the sickness begins in the second or third week, in which case it is sympathetic, due to an irritation from the presence of the foreign body (foetus) in the uterus, causing a movement of uterus that irritates the sympathetic pelvic plexuses. In this case the best treatment is a slight movement of the uterus forward by placing the patient on the back and get the fingers of one hand deep down in the iliac region and apply pressure upward and forward, while giving rotation, inward, to the limbs. In giving that rotation of the limbs flex the limbs well down on the abdomen treating both sides, but especially from the right side.

3. MAMMARY TENDERNESS AND IRRITATION, accompanied by enlargement of the mammary glands, the knotted condition of the minute mammary glands and

the increased areolar development around the nipples. This is one of the conditions that is frequently the cause of spontaneous abortion, where the mammary irritation goes on with the knotted condition, abortion is any time up to the complete formation of the foetal life. In treating this condition

(a) Treat the external blood supply in the axillary region.

(b) Treat to relax the muscles that are liable to be rigid in relation to the internal mammary blood supply at the 3rd and 4th ribs. Sometimes the mammary enlargement is an index of a tumorous condition of the uterus, the only differential point is that where there is tumor development it indicates suppuration, whereas in the pregnant condition it is always the colostrum fluid that can only be detected by microscopic examination.

4. EXHAUSTIVE CONDITIONS? indicated by emaciation, a drawn pinched appearance of the facial bladder irritability caused by pressure of the uterus, on the bladder, fainting spells, particularly during the fourth month; drowsiness, with disturbed sleep; variability for appetite, such as abnormal desire for unusual kinds of food. In these cases the best treatment is (a) gentle stimulation of the round ligaments; (b) a slight movement of the uterus forward, as before mentioned. Some claim this will produce abortion conditions, but this is not true. In some cases if the hands do not accomplish the work a vibrator has been used successfully.

5. NEUROTIC SYMPTOMS, such as neuralgia or toothache, to be treated in the usual way in connection with the fifth cranial nerve. Sudden periodic rise of temperature, irritability and such conditions as flushing of the cheeks, liver spots on the neck and arms; constipation. In these cases the best treatment is a circulatory treatment followed by treatment for constipation - treatment here is from the 5th lumbar to the 5th sacral. In all these cases of pregnancy the only points to be careful of are the SECOND AND THIRD LUMBAR. You may treat up or down from these points without danger of abortion hemorrhage.

6. THE FOETAL MOVEMENTS begin about the fourth month, accompanied by (a) fluttering of the heart, (b) periodical pulse variation - strong foetal movement reacting on the abdominal muscles and causing rigidity of those muscles. Wherever these conditions are present there are complications in the case, nervous, muscular or osseous conditions, and these ought to be treated regularly the same as you would treat any other condition.

7. UTERINE ENLARGEMENT, gradually increasing as a general rule with uniformity. In diagnosing this condition and differentiating from tumors among the points are the

- a Foetal Heart beat.
- b The presence of an iliac pulsation, particularly after eating.
- c The tendency of the uterus to expand laterally on palpation or pressure, meaning that in a tumorous condition, where it is inside the body of the uterus, we always have strong resistance of the uterus. It will spread out on pressure and palpation in foetal conditions, but in the tumor you get elastic resistance to the pressure.

8. BEARING DOWN PAINS, PERIODICALLY, particularly if these are associated with (a) abdominal fullness, meaning as distinguished from pelvis fullness; (b) abdominal and pelvis heat; (c) hyperemia of the vagina and cervix of the uterus. These are indicated by heat and congestive symptoms which the patient will report. These generally appear in the first two months and are always present where there is ante flexion or ante version of the uterus previous to the pregnancy. In this case treat for the congestion of the pelvis to prevent abortion or miscarriage, remembering to keep away from the 2nd and 3rd lumbar and NEVER ROTATE THE LIMBS OUTWARD, but inward-

9. INCREASE OF URINE with the lessening of the specific gravity, the usual specific gravity being 1012 or 1013 in these cases.

10. After the third month the uterus enlarges in globular form and instead of as normally floating in the abdominal and pelvic cavities, becomes a dependent with a tendency to sink or drop in any of the directions in which the uterus may fall, as anterior, posterior, lateral, prolapses. The result of this is that from the third month the anterior vagina wall is shortened. The perineum becomes stronger and more rigid. This continues until about the fifth month when the uterus is forced above the pelvic brim, then the vagina wall becomes longer and the perineal structures relax. This means that during the third and fourth months the sub uterine structures are solid and resistant, e.g., the structures from the uterus down to the perineum are soft and elastic. We do not believe in the use of sounds, etc. in diagnosing a case of pregnancy, and being of no special value they should not be used, as they may result in complications.

THE DEVELOPMENT OF THE FORTUS

Foetal development is a physiological process in which a new structure, later to become an organ

and ultimately an organism as the development is completed, is formed. The origin of the foetus is the impregnated ovum. In its first stages it is found in the oviduct, as it passes through the oviduct to the uterus it receives nutrition --

- a From the discus proligerus;
- b From a fluid secretion (internal secretion) from the mucous membrane of the oviduct itself.

After passing through the oviduct and becoming attached to the uterus it receives its nutrition from --

- a the corionic villi
- b from a fluid secretion from the mucous membrane of the uterus (internal secretion)
- c Through the umbilical vesicle, the nutrition being carried to the embryo along the omphalo mesenteric vessels.

d In the first stage of embryonic life through the placenta, as the medium between the maternal blood and the embryonic blood. It is only in the last stage that there is distinctive embryonic blood. In stages (a) and (b) there is no distinction between the maternal blood and the embryonic blood.

In the early embryonic life the heart consists of a single cavity from the upper end of which the aortic arches branch and from the lower end the omphalo mesenteric veins. The blood is driven into the embryonic body by the force of the heart along the aortic arches and it is distributed to the embryonic field of the umbilical vesicle by the omphalo mesenteric arteries. The return blood to the heart comes back by the omphalo mesenteric veins from the venous sinuses. In the last stages when the placenta is the blood medium the placenta drives the blood into the foetus along the umbilical vein by a placental visceral movement, a peristaltic action. The blood is branched into two currents, (1) the larger current that passes into the inferior vena cava; (2) a smaller current that enters the liver and passes to the vena cava through the hepatic veins. That is an explanation of the statement that in the early stages the liver has a heart function, one current goes to the heart with its single cavity; the other passing through the liver. The blood of the first current is the pure blood passed from the placenta to the right auricle the cuneiform valve directing the current of the blood through the foramen ovale to the left auricle and thence to the left ventricle. From the placenta to the beginning of the visceral circulation we have the placenta as the driving force.

The blood from the head and upper extremities passes to the right auricle, the superior vena cava passing to the right ventricle. The blood from the right ventricle supplies the head and upper extremities, the contraction of the heart forcing the blood from the left ventricle into the aorta and from the right ventricle into the pulmonary artery, the blood then enters the pulmonary artery from the right ventricle passes into the aorta through the ductus arteriosus below the level of the point at which the arteries for the head and upper extremities are given off. The impure blood is thrown out from the right ventricle and after entering the aorta supplies the trunk of the body, lower extremities and the placenta passing from aorta to the internal iliacs, thence to the hypogastric arteries and thence returned to the placenta. The trunk of the body and the lower extremities are supplied by practically an impure stream and any obstruction will result in a poorly nourished trunk and lower extremities while the upper part of the body will be well nourished. The liver is fully developed at the fifth month, this development being marked by the beginning of the bile formation function, the bile being passed to the large and small intestines. From that period on the kidneys become fully developed, the external secretion of the kidneys corresponding later with the urinary formation which is being developed at this period, the external secretion being thrown out into the amniotic fluid.

The first movement of the foetus in normal cases is found about the 13th week. These movements are limited to the upper and lower extremities. The body movements of the foetus begin about the four and one half month period.

After birth there are two important changes taking place--

1. The ductus arteriosus begins to gradually contract between the second and fourteenth days. This really is a condition in accord with an independent life and an independent blood circulation and it is the critical time of life owing to the likelihood of sudden blood changes from the contraction of the ductus arteriosus. Treat the child as a cold blooded animal, incapable of accommodating any temperature changes of itself. Along with this change the closing of the ductus ovalis foramen ovale) takes place between the 10 and 14th days. In some cases the foramen ovale remains open and here we have the cyanotic condition of the child which may persist as long as the child lives if the foramen ovale remains open, or it may

cause the death of the child. 2. The obliteration of the umbilical veins and the ductus venosus takes place from the second to the fifth day. The obliteration of the umbilical veins results in the formation of the ligamentous structures of the liver, and this is the cause of death in some cases, about the fifth day, when the obliteration is incomplete, the child's body becoming jaundiced all over. That is a typical condition found in some cases when the child dies about the fifth day. The importance of these points rests in this that the child during the intra uterine life and for two weeks after birth is practically a blood mass, the organic development and the development of the nervous system taking place almost as a side issue. This means that during the period of pregnancy the maternal blood condition and the maternal circulation should be at its maximum. One of the causes of rickets in children is the deficient blood and excessive lymphatic condition of the maternal organism. This implies that during the period of pregnancy, the mother should be treated from the blood side, particularly if there is any indication in the family history of any deficiency in the blood condition. In addition to the general blood treatment under these circumstances treatment of the placenta can be applied by direct treatment over the uterus itself, the best method being a gentle rhythmic treatment appealing to the peristaltic action of the placenta through the uterine walls and the fluid, e.g., amniotic, chorionic, etc. In some cases you can cause child development by vibratory treatment over the uterus, which will stir up the peristalsis of the placenta and the circulation. Use this in cases of rachitic history. In some cases the development of the pregnancy itself causes marked anemia of the mother organism, accompanied by emaciation. Treat the maternal organism to increase the blood, in addition to the uterine and placental to increase the general circulation. Nothing tends so much to develop weak children as an excessive lymphatic condition in the mother. We must here treat the mother on the blood side and also give attention to the diet to increase the blood in the maternal organism.

Treatment during pregnancy itself.

Pregnancy is to be considered a physiological condition. Pathological conditions may

arise as complications, which complications may arise from various causes, e.g. neurotic condition of the maternal organism; diseased conditions, e.g. the presence of such a disease as tuberculosis or any condition which will affect the whole organism. The symptoms that develop in the course of pregnancy in the majority of cases do not represent pathological conditions, but simply symptoms of a lack of equilibrium between the maternal organism and the foetal organism, or a more or less exhausting condition of the maternal organism, caused either by some reflex in the maternal organism itself or in the foetal organs. Among these are to be classed Morning Sickness, loss of appetite, mental depression and neuralgia and rheumatic conditions. In the early period of pregnancy thorough treatment should be given to the spine from the occiput down, to tone up the nervous system, normalize the circulation and establish thorough elimination. Careful examination should be made at this period for lesions in the coccyx, innominate and lumbar region. Attention also should be given to the dorsal and rib lesions so as to prevent sensory irritation, stomach trouble, etc. or interference with the diaphragm. During the early period the abdomen and its organs should be treated so as to tone up the visceral action of the organs and also to tone up the abdominal muscles so as to prevent a tendency to abortion. Any displacements of the uterus should be carefully corrected previous to the end of the third month. This applies particularly to posterior displacement of the uterus. In giving this treatment do not use, as is commonly recommended, tampons or supports of any kind. The best treatment is the one previously mentioned lay the patient on the back treating the ligaments of the uterus by gentle inhibition followed by mild stimulation; take the fingers of one hand, push in on the median line side of the ligament flexing the limb on that side gradually as you push the fingers deeper and deeper; when the fingers are deep enough to catch the body of the uterus give rotation to the limb INWARD. This may be given as necessary to reestablish normal conditions. This treatment will always tone up the perineum. In the early stages the perineum must be rigid and should not have local treatment; internal rotation of the limbs will be sufficient. This treatment will also stir up the peristaltic action of the abdominal muscles. The patient should take sufficient food of a digestible nature to keep up nutrition both for the maternal and the foetal

organism. All indigestible food, acid food, or those tending to gas formation should be eliminated; using plenty of fresh air, walking and exercise. In a case of insomnia a warm bath in addition to osteopathic treatment. At this period the patient should have longer hours sleep than usual. The garment must be quite loose all around the abdominal field and even abdominal belts and supports are to be avoided. If the abdominal muscles are not strong enough to support, give treatment to make them so and also have the patient exercise in the open air.

During the later period of pregnancy, from the fifth month on, the principal conditions that develop are those of pressure symptoms, caused by pressure of (a) of the enlarged uterus on the contiguous organs and blood vessels; (b) of constipation conditions. In this last case treat for constipation and regulate the diet of the patient, having the patient use freely the fruits and coarser forms of food and eliminate as much as possible the carbohydrate element. Another point in the constipation is the free use of water, a larger proportion of water can be taken during the latter part of the period; it keeps up pressure of the blood system and helps to keep up the force of the blood circulation to and through the placenta field. In relieving the general pressure symptoms indicated by such conditions as sacro iliac pains and pains in the inguinal region, disturbed circulation through the lower extremities

1. Spinal treatment should be given, avoiding the points mentioned before.
2. Abdominal manipulation should be given, the main point in this being to stretch and promote peristaltic action of the intestinal tract. This is called for because the enlarged uterus presses the intestines laterally to the extreme position possible.
3. Give treatment to relieve pelvic congestion.
4. Treatment of the lower extremities - (a) thorough kneading and articulation from the foot upward; (b) rotation of the limbs inward with light flexion onto the abdomen; (c) direct treatment of the pelvic and abdominal muscles, which is materially assisted by the internal rotation of the limbs, (d) have the patient flex the limbs at the knees, hold them in flexion and separate the limbs about 12 inches, the patient doing this for herself. This is one of the best things to do to reflex the psoas and iliac muscles, etc, in that area. Have the

patient do this five or six times some two or three times a week. Another active movement for the patient is to lie on the back with the limbs flexed at the knee and the knees together and while in that position elevate the pelvis a few inches above the level on which the patient is lying.

5. Another pressure condition that is frequently found is a pressure pain on the right side caused by the exaggeration of the normal right sided deviation of the uterus, that is to say, the normal condition of the pregnant uterus, which deviates more to the right than to the left, associated with the length of the ligaments on the right side. This may be relieved- (a) by having the patient rest more on the right than on the left side; (b) by slightly stretching the right side with the patient lying on the left side, here giving the diagonal stretching treatment; (c) Gently moving the uterus toward the median line with the patient lying on the back, treating as before mentioned.

6. Oedematous conditions in the lowerlimbs, varicose veins and hemorrhoid conditions can be relieved- (a) by having the patient retain the recumbent position from one to two or more hours during the middle of the day; (b) by the direct treatment of the lower limbs upward; (c) by articulation of the spine upward; (d) when the varicose vein becomes hard and rigid, the free use of olive oil applied locally so as to cause the absorption as much as possible.

7. From the seventh month on, if the patient is nervous, treatment ought to be given twice a week to control the nervous symptoms; in other cases treatment should be given only once a week, directed principally- (a) to the spine; (b) to the abdominal and pelvic muscles; (c) to the increase of the general circulation.

PRESENTATION.

Any form of presentation would be practically normal if the pelvic measurements were absolutely normal and the abdominal and pelvic muscles were normal in condition. The normal measurements of the true pelvis are--

The Internal Conjugate Diameter- antero posterior, four and one half to five inches,

The Oblique diameter, five to five and one half inches.

Sacro Iliac Articulation to Pectineal Eminance, external, 12 inches; anterior between the anterior superior spine of the Ilium,

between the great trochanters, 14 inches; anterior, between ischial tuberosities, 6 inches anterior. The last two are the most important though the least attended to, because they indicate the general extent of the pelvis and its holding capacity under pressure at the pubic articulation. These are the most important from the osteopathic standpoint, the other diameters not amounting to so much, as, under osteopathic treatment they can be enlarged from one to one and one half inches through the muscular treatment.

The principal condition to examine into is malformation or deformity - (a) in the coccyx- (b) in the pelvis, particularly if there is a history of rickets; (c) mal nutritional condition of the muscles. This generally applies to the entire muscular system of the body. (d) pressure of foreign growths, e.g., hemorrhoidal or tumorous conditions. About ninety percent of the presentations are normal the child's head and face downward. In the presentation of the forehead, diagnosed by the fontanella, depress the chin downward on the chest so as to lessen the diameter or diminish the apex of the presenting head. You will not that most obstetricians recommend insertion of the hand and depression of the chin by insertion of the fingers in the child's mouth, or on the malar bone, but this is not necessary. Try placing your hand on the child's forehead and press on the forehead. In the presentation of the hands an attempt should be made to turn the child and to assist in doing this by inhibition out off the labor pains - inhibition applied over the third lumbar and over the sacrum. In what is called breach presentation cut off the labor pains, also stimulation of the dilatation, and attempt to turn the child. In the foot presentation also attempt to turn the child, cutting off the labor pains, unless where the entire forelegs or legs have been delivered, in which case simply stimulate the delivery as in a normal presentation. In attempting to turn the child under the conditions mentioned.

1. Have the patient on the back and use the treatment before mentioned to move the child through the abdomen as much as possible to the left side of the abdomen, that is, going to opposite extreme from the normal position of the child, or, normally there is an oblique or right side.

2. Then change the position of the patient from the back to the left side and in that position use the bumanual method of attempting to turn the child the best you can.

3. Elevate the pelvis gradually. This is where we should have a reviving, rotating, etc. table, instead of using pillows. If you can elevate the pelvis and lower the head of the patient while on the left side it will assist in turning the child itself.

4. Keep inhibiting periodically the labor pains and also relaxing the abdominal and pelvic muscles. Take note of the periodic interval between the labor pains in the particular case and apply inhibition so as to come before the next labor pain is due in that particular case.

In the normal presentation have the patient
1. On the back; change this position gradually to the left side and do not attempt to turn or rotate the child. If it is a head presentation pay no attention to the angle.

In simulating the process of presentation as distinguished from the process of labor proper
(a) inhibit upward along the entire spine, gradually increasing the force of the inhibition from one inhibition to another.

(b) Strong inhibition between the ninth and tenth dorsals. This cuts off the sensitive pains, distinguished from the labor pains;

(c) Gently articulate upward from the ninth dorsal.

(d) If there is stomach irritation, gas formation, etc., apply inhibition at the fourth, fifth and sixth dorsals, and follow this by a gentle stimulation, gradually increasing the force of the stimulation, gradually increasing the force of the stimulation by putting the fingers and thumb on either side of the fourth and fifth dorsals, and giving moving pressure. This will cause bloating and gas and if the stomach is irritated you will free it and it will begin to contract and lessen its dilatation.

(a) Articulate gently at the second, third and fourth lumbar.

PHYSIOLOGICAL SIDE OF THE LABOR PROCESS

From fourteen to twenty one days before parturition the uterus descends from the abdomen to the pelvic position. In some cases the descent does not take place until a few days before parturition.

Following these changes in the uterus, respiration becomes more normal, the pressure on the stomach is relieved and the abdominal muscles tend to become intense and the tension increasing as the uterus descends into the lower pelvic cavity. During the time we find bladder and rectal irritability with the tendency;

(a) to interference in locomotion, accompanied by exhaustion of the lower extremities;

(b) oedematous condition of the lower limbs.

To relieve these conditions (a) have the patient on the back (i.e., in the recumbent position as much as possible; (b) give gentle internal rotation with slight flexion of the lower limbs; (c) direct manipulation of the soft tissues upward from the feet.

As the parturition process proceeds the cervix uterine glands secrete a thick mucoid secretion which may be discharged by itself or mixed with hemorrhage. If this discharge is quite free it is an indication of the normal physiological condition of the cervix of the uterus, that is, that the cervix will dilate normally. In this case no treatment is necessary to produce dilation, or the dilation will take place in the normal course of labor.

The next change is the congestive condition in the vaginal walls, the result of this congestion being - (a) the formation of a free secretion on the walls, keeping the walls thoroughly moist; (b) the thorough relaxation of the vaginal walls. When these secreting changes have taken place with the accompanying relaxation, there follows normally uterine contractions and these may be present at varying intervals for several days previous to parturition. The indications then, from the physiological side of normal labor process are --

1. The descent of the uterus.
2. An abnormal secretion at the cervix of the uterus and the vagina.
3. The gradually progressive relaxation of the vaginal walls. These may be called the pre-parturition physiological changes.
4. Another change which may or may not fall under the head of pre parturition changes is the discharge of the amniotic fluid. This may take place along with the third change already mentioned, or it may be delayed until a later stage in the actual labor process. If the discharge takes place during the pre parturition period have the patient lie quietly on the back; make cold application over the symphysis to control possible hemorrhage and to prevent bladder contractions which may interfere with the labor process that is to follow. If hemorrhage develops at this stage treat as in the case of pelvic congestion. This treatment may be assisted in some cases of hemorrhage by--

(a) by the insertion of a wad of absorbent cotton into the vagina, thoroughly saturated with a moderate vinegar solution, only applied in severe hemorrhage;

(b) In case of blood clots passing out along with

the amniotic fluid give treatment for the contraction of the uterus, inhibiting in the lumbo sacral region, accompanied by strong pressure over the uterus itself through the abdominal wall.

(c) If the hemorrhage becomes very severe and the blood that is discharged is free arterial blood. The only thing that can be done is to plug the vagina and that can be done by the same method as before mentioned, using absorbent cotton or gauze saturated in vinegar. Take cotton rolled in a little wad, cover with gauze and saturate with vinegar solution and plug, using small plugs and a number of them rather than one large plug because one large plug tends to cause uterine contraction and labor pains. Another point in this connection is very hot fomentation applied directly to the vagina and cervix of the uterus to control the hemorrhage in severe cases. This plugging can also be applied in gynecological cases, in menstrual flooding. These are what may be called the four prepararturition stages.

LABOR PROCESS PROPER

There are three stages in the labor process.

Up to the point of the dilatation of the cervix. Here the pains are acute beginning in the lumbo sacral region extending to the pubic region, radiating abdominalward or limbward. These pains are caused (1) by the uterine contractions in connection with the over stimulation of the uterine nerves and (2) by the mechanical dilatation of the cervix. The blood change is important, viz., the increase of arterial pressure in proportion to the contraction of the uterus. The rapidity of the pulse is also increased in proportion to the intensity of the labor pains. Respiration becomes slower during the pains and increases in rapidity between pains. The temperature rises gradually at the pains increase. Sometimes sensitiveness is exaggerated to such an extent that vomiting may be present. In this case treatment should be given to control the vomiting. In some cases also the kidney action is increased on account of increase of blood pressure. If the urine is increased up to the point of mechanical discomfort the catheter should be used to remove the urine. As the dilatation of the cervix takes place in connection with the congested condition of the mucous membrane treatment should be given (a) over the sacrum to increase dilatation, the sacral fibres are dilator fibres. (b) Treatment should be given to determine the blood pelvicward, to

create a congestive condition in the pelvic region.

As the descent of the head into the pelvic cavity is determined by the force of gravity exerted by the child body the best way to increase the force of gravity, is as the gradual dilatation of the cervix takes place, to apply strong pressure over the uterus through the abdominal wall. Some say that to facilitate this force of gravity the patient should not be allowed down until labor pains are severe, but I do not think this is necessary if the patient is on the left side or on the back. In applying this pressure over the uterus place the hand just above the pubic region and apply strong pressure over the muscles and continue this pressure backward toward the sacrum with an inclination downward. To increase the force of this treatment - (a) apply inhibition over the round ligaments and continue this every few minutes until some perceptible dilatation takes place; (b) apply strong inhibitory pressure under the ischium on both sides, so as to reach the nerve supply of the circular fibres and the nerve supply of the os. Continue the pressure until dilatation of the os takes place, at intervals of a few minutes and until the foetal head reaches the pelvic floor; (c) after the pains begin stimulate strongly between pains at the second and third lumbar and if the patient becomes very sensitive in connection with the pains turn the patient on the side between pains but get her on her back again before the pain comes. Patients differ as to time between pains. (d) To relieve the intense sensation of the labor pain inhibit in the sub ischial region and at the fifth lumbar, the inhibition does not interfere with the progress of labor, (e) To relieve nervous strain inhibit strongly in the upper dorsal and through the cervical regions. (f) When the dilation pains become intense apply strong inhibitory pressure over the pubic area, both supra and sub pubic, as the pains begin anterior and pass posterior. (g) If the patient becomes chilly stimulate in the upper dorsal region and also over the pharynx in the neck. If the patient is sick with tendency to vomiting stimulation of the fourth and fifth dorsals and inhibition of the vagi. If patient's feet and lower extremities become cold or chilly apply heat to the feet. (h) When the os has begun to relax inhibit between pains to increase the relaxation of the os and stimulate thoroughly at the second and third lumbar to bring on the labor pains. Apply the stimulation between the

spinous and transverse processes and if the labor pains do not come on in regular periodicity apply the stimulation at the second and third lumbar at regular periods, i.e., suppose a pain comes on in two minutes, the next in ten minutes, the next in five minutes, etc., apply the stimulation every three or four minutes to induce regularity of the labor pains. (1) If the bearing down pain becomes intense before the dilatation and the uterine contraction meaning that we will find in the next stage two things working together, viz. a dilatation of the part with the contraction in the upper or uterine part -- if the bearing down pains come on before this, inhibit them by strong inhibitory pressure in the sub ischial region.

SECOND STAGE OF PARTURITION.

From the dilation of the cervix to the delivery of the child. During this period there are two things particularly to be attended to -- (a) The stimulation of bearing down pains -- done best by extension of the spine or stimulation in the sub ischial region.

(b) The prevention of tearing or laceration. The tearing takes place as the result of the too rigid movement of the child body. To prevent this stimulate for dilatation and increase the perineal support. In the bearing down pains the abdominal muscles are principally brought into play, increasing the contraction force of the uterus. To stimulate these abdominal muscles apply articulation below the third lumbar. Among the complications found at this period are cramps in the limbs. These are best controlled by a slight rotation. Then the feeling of perineal tearing and tenesmus, vulvo vaginal tetanus. The cause of these is the pressure exerted by the foetus on the pelvic organs, the uterus and the stretching of the soft parts of the pelvis. To control these strong stimulation over the symphysis may be applied. A similar treatment may be given in cases of flooding to control it.

Uterine pains also occur. This pain is caused by the decrease in the uterine cavity, as the os dilates you have the play of contraction and relaxation and also the action of the muscular fibres in the body of the uterus pulling the cervix upward over the descending foetus. At the beginning of the uterine contraction the cervix becomes irregular, decreasing in size, in the later stage it increases in size and as the stage of dilatation increases it decreases in size, not taking place at the begin-

ning of the contraction. As the second stage advances the dilatation takes place more rapidly, the cervix changing its position from the posterior and to the left towards the central position. The longitudinal fibres of the body of the uterus fundus at this stage overbear the action of the circular fibres of the cervix and this tends by reflex action to open the cervix. The amniotic fluid sac at this stage projects through the os, at first in the shape of a watch crystal, later in the shape of a hemisphere, the size and form of the sac depending on (a) the type of presentation; (b) the extent of the os dilation. The natural period for rupture of the sac is the completion of the cervical dilation. When this takes place the delivery of the child should follow. The forces that produce the delivery are (a) the abdominal muscles; (b) the force of uterine contraction. At this stage both of these forces are active and voluntary until the foetal head is delivered from the vulva; after this the abdominal and uterine forces of contraction are purely reflex. That means it is only in the first stage of delivery that bearing down pains are active. After that they are uncalled for and that will determine whether there is to be stimulation or inhibition of these pains, which take place in the sub ischial region and at the second and third lumbar. (In the after period inhibit at the same point)

Vaginal dilation is a mechanical condition produced by the descending force of the presenting part, except at the orifice, — When the sphincter muscles offer resistance. This resistance of the sphincter muscles is overcome by the uterine contraction; at each contraction the foetal head descends slowly, followed by a slight recession between the contractions and unless this recession is overcome by the abdominal muscle force. This slight downward movement from contraction to contraction continues until the parietal protuberances are free from the vulva. At this point the strong uterine contraction accompanied by the abdominal muscle contraction drives out the child body. To increase the force of the expulsive action articulate from the second lumbar down and in some cases that will produce an enormous force. In one case I saw it produce not only enough force to expell the child body but to project it several feet onto the bed. It must be used only at the late stage, if earlier it would cause laceration. During this stage the principal thing to contend with is

(a) weak uterine contraction; (b) exhaustion of the patient; (c) vomiting. If these conditions persists in an aggravated form delivery should be produced as quickly as possible, e.g. by strong stimulating pressure in the sub-ischial region and strong articulation of the three lower lumbar vertebrae. The sensitive pain should be inhibited between the ninth and tenth dorsals. To increase the force of the labor pains the best method is (a) the inhibition of the labor pains for the second or third or more of the periodical contractions; suppose they come every three minutes— inhibit those pains for two or three of the periodical contractions, allowing them to gather force. (b) inhibit strongly the sensitive pain; (c) Strong stimulation in the sub ischial region.

In regard to the time at which the patient shall be changed from the back position to the left lateral posture; as a general rule we may say that the change should take place when the foetal head issues from the vulva; as an exception to this rule, change the patient at any time when there is danger of laceration or perineal rupture, because this position lessens the danger from rupture. In case the perium is not sufficiently relaxed to allow of delivery without rupture— (a) the labor pains should be inhibited; (b) direct pressure should be brought to bear on the presenting part; (c) flex the limbs of the patient toward the abdomen, fold a pillow and place between the limbs, holding them tight in that position; (d) to retard the descent of the presenting part place one hand on the presenting part to prevent the descent during contraction, the other hand in the lumbar region pulling the head back of the patient forward so as to relax the abdominal muscles. The limbs are flexed and this causes relaxation of the abdominal muscles and will not contract the uterus. (e) The perium should be supported. The best way in a case of this kind is to take a long towel tied around the patient from the perineum around the two iliac points. This will support the perineal structures toward the anterior superior spines of the ilium. Between the contraction pains apply pressure over the perineum symphysiward. In some cases it is necessary to apply perineal support per rectum; apply the pressure per rectum toward the symphysis. After the delivery of the head of the child, the body can easily be delivered — (a) by articulating in the

lumbar region; (b) strong pressure downward on the uterus through the abdominal wall. This same treatment can be given later in the afterbirth.

After delivery of the head see that there is no obstruction in connection with the cord. If there is any obstruction, e.g., if coiled around the head of the child it may be necessary to distangle and in some cases to ligate. It is not necessary to take any special measures in turning the child --- the peritum canal is a spiral canal and the child's body while presented at different angles it makes no difference as the contraction will cause the child to take the proper position. When delivery is completed then wait until the umbilical cord has ceased to pulsate before tying and dividing the cord. If there is very rapid pulsation of the cord attempt to inhibit the action of the blood ^{by} pressure over the cord itself with the finger and thumb pressure and relaxation about twelve inches from the umbilicus, until pulsation ceases. The reason for allowing the pulsation to cease is that the child receives the maximum of blood into the body and there is no liability of collapse on the part of the child.

There are some cases reported that the child has lost weight, say twenty four hours after birth. This is due to the fact that the child has been deprived of some blood belonging to it from the placenta and the child body must make new blood. If all the placenta blood is allowed to drain into the child there will be no difficulty with the child. If the child is lacking in respiration and vigor the best thing is an osteopathic treatment, I do not believe in using the warm bath, etc. Treat the child as a grown person, treating the along the spine, even holding the child head up and then head downward, the force of gravity causing the circulation of blood through the body and this is better than artificial respiration. The best treatment is through the blood supply.

Third Stage in Parturition.

The detachment and expulsion of the placenta. The expulsion should take place in twenty or twenty five minutes at the longest. The best way to stimulate the expulsion of the afterbirth -

(a) articulate downward from second and third lumbar;

(b) apply strong pressure on the uterus through the abdominal wall. In some very obstinate cases I have taken hold of the uterus through the abdominal wall with the hands and squeezed it from side to side between the hands.

(c) **Strong stimulation right over the symphysis.**
 The uterine contractions and uterine retractions cause the placenta separation from the uterus and also prevent hemorrhage, the muscular fibres of the uterus acting as ligatures. Detachment takes place by uterine retractions; expulsion by uterine contractions. In some cases where there has been trouble in getting the placenta away from slight traction on the cord has been helpful.

After delivery of the afterbirth replace the uterus in its normal place at once by manipulation through the abdominal wall, with patient on the left side. When there is prolapse internal replacement may be necessary. Cause the uterus to contract apply slight stimulation in the lumbar region. If necessary articulate later and also give gentle stimulation over the symphysis. This will prevent the possible danger of flooding.

Immediately after replacement of the uterus place the patient on the back, place one hand over the uterus to hold in position and flex the limbs one at a time gently upon the abdomen and then stretch the limbs out gently in extension. This will prevent all cramps and stimulate the circulation through the lower extremities and this will prevent development of dislocation. Sometimes we find dislocation in one limb following parturition, then apply gentle friction over the uterus over the abdominal wall. Give strong inhibitory pressure at the third and second lumbar and from there down, to reduce the pain. At this stage apply the abdominal bandage tightly across the abdomen; in some cases if it is necessary to use packing to elevate the abdomen to get sufficient tension;
 The use of the Forceps.

I have never used them. I do not think they should be used, unless in one possible case, i.e. where the exhaustion of the patient is so great that there is danger of collapse - (see reason for collapse before mentioned).

In dealing with an obstetrical case it is not necessary to make an pelvic examination unless there is a deformity involving the spine or the pelvic proper or a rachitic history. In connection with this case there are some general points to be noted:-

1. The use of the sitz bath. This may be used freely previous to the parturition process.
2. Antiseptic conditions in all obstetrical cases; Bichloride of Mercury Solution is the best to use in these cases. The danger of infection in obstetrical cases is so great that a thorough antiseptic should be used.
3. The perineum and vaginal walls should be thor-

oughly relaxed, This may be done by direct inhibitory pressure and gentle kneading treatment around the perineum itself. If there is great rigidity in connection with the vaginal walls and the os the best way to get relaxation aside from osteopathic treatment is by the use of hot olive oil, or warmed slightly above the internal temperature of the body. This is applicable particularly when you have tetanic conditions involving the perineum, vaginal walls and the os. There are some cases where this tetanus exists and it is often the primary cause of a prolonged labor and there is nothing that will produce dilatation as well as this warm olive oil, without bad results, with the sub-ischial treatment, etc. Use the olive oil with a syringe, the bulb kind and use enough to thoroughly saturate the entire cavity and keep introducing the olive oil as much as it possible.

4. In order to hasten the labor process give strong stimulation at the third and second lumbar, with the patient on the side and if the patient is on the back turn her on the side to give this treatment

5. To assist in dilating the os apply strong inhibitory pressure at the eighth dorsal, ninth and tenth affecting directly the circular fibres of the uterus.

6. To lessen the pain give strong inhibition at the seventh and eighth dorsals eleventh and twelfth dorsals, and the fourth and fifth lumbar vertebrae, also pressure over the round ligaments. These different forms of inhibitory pressure will cut off the sensory nerve impulses.

7. If the labor pains and the expulsive uterus actions are retarded give strong articulatory stimulation first upward and then downward in the lumbar region then treat to relax the round ligaments as they pass over the pubic crest in order to allow the uterus to descend as far as possible into the vaginal field, also apply steady pressure right over the symphysis pubis and downward internal to the symphysis. This will aid in relaxation and lessen the pain. In giving the internal treatment to the symphysis begin at the os and move toward the median line. the pain travels lateral from anterior to posterior.

8. In abnormal presentations be careful to find the condition of the umbilical cord and if necessary stimulate the respiratory action by friction on the child's skin. The internal respiration should not be established until the pulsation of the umbilical cord ceases. This makes it necessary sometimes to cover the mouth of the child in order to prevent

entrance of a volume of air before the respiratory center is stimulated.

9. If the placenta has not been delivered within fifteen or twenty minutes treatment should be given (a) in the form of strong stimulation ~~xxxxxxx at kxxxxxxx~~ at the second and third lumbar. (b) strong pressure over the uterus through the abdominal wall; (c) strong stimulation in the supra pubic and sub ischial regions. In case of hemorrhage this last treatment should be applied strongly.

10. After the delivery of the child and placenta deal with the after pains by inhibition - (a) in the dorsal lumbar region: (b) over the symphysis toward the perineum: (c) apply strong pressure from the points marked by the heads of the femurs toward the median line, also between the tubercles in order to prevent too much stretching and the assist in ligamentous retraction. Give slight articulation of the hip joints, inhibiting pressure from the median symphysis points, toward the heads of the femure. In case of severe labor pains relax thoroughly the cavicle and upper ribs and rotate the arms.

11. In case of uterine hemorrhage- (a) give strong inhibition over the symphysis and the sub ischial region; (b) if the hemorrhage is associated with the lack of uterine retraction grasp the uterus through the abdominal wall and apply as strong pressure as you can. Gently work over the fundus of the uterus through the abdominal wall in order to close contraction and closure of the sinuses. This treatment also induces the uterus to resume its normal position, prevents a number of after pains and also checks tendency to hemorrhage.

12. Place the patient on the back after labor and try to induce sleep by any simple sleep producing treatment; If the patient is restless - (a) slightly elevate the pelvis: (b) If there is displacement of the uterus or if the uterus has not resumed its normal position try to replace it, (1) by direct attempt through the abdominal walls: (2) by stimulating the contraction of the round ligaments.

(c) If any septic symptoms develop indicating presence of foreign material such as clots of blood, etc. use a bichloride of mercury solution, 1 in 4000 for thorough irrigation.

13. Look out for after effects in the form of vasomotor conditions, such as congestion, twitching, static conditions of the blood. Deal with these in the lower half of the splanchnic area and in the lumbar region with inhibitory pressure - (a) over the abdomen, upward: (b) over the abdominal aorta; (c) by the injection of hot water into the uterus.

14 The complication of the labor process is sometimes found in connection with the dislocation of the hip tendency, especially where the patient is pre-disposed to what is called milk leg. In this case use rotation, beginning with internal rotation only, followed by external rotation of the limb.

15. In dealing with sickness, nausea, vomiting treat similar to morning sickness of early pregnancy by articulation of the spine upward from the lower dorsal and stimulation at the fourth and fifth dorsals.

16. In cases of mammary gland tenderness, ~~axillary~~ ~~axillary~~ and soreness, or deficient milk secretion, a thorough raising and spreading of the third, fourth and fifth ribs will gradually relieve the tenderness and along the treatment in the cervical region will stimulate the mammary glands function. You may find a condition where one mammary is performing its secretory function while the function of the other is suspended. In that case treatment on the deficient side will generally be sufficient to stimulate the milk secretion. In the late development of the case the spreading and separation of the ribs (upper) and relaxation of the scapulae will stimulate the subclavian and axillary mammary circulation which supplies the mammary glands with the secreting blood supply. A thorough treatment at the spine is also called for to reach the intercostal nerves. The spreading of the ribs not only reaches the arterial blood supply but assists in establishing drainage through the venous system. The internal mammary artery may be reached directly at its point of origin from the subclavian and inferior cervical ganglion

17. In weak or delayed uterine contraction before the expulsion of the placenta assistance can be had by thoroughly saturating a towel in cold water folding it twice or three times and laying it on the abdomen. the cold water acts as a shock to the uterus and that causes the uterus to contract and this helps in the expulsion of the placenta. In cases where there is a tendency to uterine hemorrhage following placenta expulsion cold water may be injected into the uterus provided care is taken that the patient nervous system is not shocked and produce chills. Only use this in the emergency of an uncontrolled hemorrhage. Some recommend in any case a hot douche but I do not advise this, as it is not necessary. The old custom

of keeping the patient on the back for several days after labor I do not advise, but think it better to have patient lie periodically on the side and on the back. One of the common conditions arising from lying on the back is milkleg.

ABNORMAL CONDITIONS IN CONNECTION WITH THE PARTURITION PROCESS:— (a) ~~Abaxian~~ Abortion - Miscarriage and premature labor. If the change takes place previous to the end of the fifth month it is commonly called abortion or miscarriage; after the sixth month it is called premature labor. Among the causes we find general exhaustion and debility; some of the infectious diseases, like small pox, scarlet fever and syphilitic conditions; reflex causes such as nervous irritation; sometimes mental diseases and frequently chronic constipation. Previous abortions or miscarriage predisposes to a repetition of this condition. Symptomatic conditions are pains very similar to the pains of dysmenorrhea, particularly during the first three months. During the first three months the foetus is entirely free within the uterus; after the third month it is very strongly adherent to the uterus. In some cases miscarriage or abortion cannot be prevented. The signs of what may be called uncontrollable abortion are periodic and regular labor pains, periodic hemorrhage, dilation of the os, accompanied by cervical and vaginal relaxation. In this case the only thing that can be done is to treat the condition largely the same as a case of labor. In all other cases abortion can be prevented. Here the symptomatic conditions that are present are dragging pain, sensation of weight, pressing downward, slight hemorrhage or slight discharge of the amniotic fluid. In this case the treatment is.

1. Place the patient on her back and keep her lying quietly on the back; apply the cold pack principally in the symphysis region in order to prevent bladder and urethral contusion. To keep under control the hemorrhage where there is hemorrhage use the absorbent cotton saturated in weak vinegar solution.

2. Try to promote absorption unless where there is the discharge of clotted blood. In promoting absorption give treatment in the sacral region, strong inhibition, treat to inhibit the dilator function of the sacral nerves.

3. Give treatment to the spine— (a) inhibiting sensitive pain at the ninth dorsal; (b) inhibit the labor pains by strong inhibitory treatment

from the eleventh dorsal down. In this case when you are dealing with the threatened abortion or premature labor have the patient lying on the right side unless where there is hemorrhage. In case of hemorrhage use the method mentioned before plugging the vaginal canal with the patient on the back, then turning the patient on the right side.

In what is called milk leg the condition is due to obstruction of the circulation, the most frequent cause of which is the patient lying too much on the back during the later period of pregnancy, the pressure obstructing the return circulation and sometimes it develops a varicose condition of the veins and later the milk leg. In the varicose condition of the limbs the best treatment is manipulation of the limb upward and have patient move around as much as possible also the free use of olive oil applied around, not over the varicose or enlarged vein. Milk leg is found more commonly in the left leg because the right common iliac artery lies immediately over the left common iliac vein, acting as a ligature to the venous circulation and obstructing the return current of blood, more particularly when the patient lies much on the back.

Milk leg therefore, is—

1. An obstructed venous circulation.
2. An acute oedematous condition, caused by the venous obstruction.
3. A localized swelling resulting from the

oedema

Generally there is a localized pain, also a local febrile temperature. Among the lesions found are, lesions of the left innominate, subluxation of the left hip joint: excessive relaxation of the pelvic muscles which does not allow of the mechanical support of the nerve and blood supply, the result being that the blood vessels are mechanically pressed upon the bones.

Treatment: - (1) stimulate the general circulation as the parturition process. there is no limitation to the treatment.

- (2) Slight rotation of the pelvis.
- (3) Flexion and rotation of the lower extremities on the trunk, flexing the limbs strongly on the abdomen, then giving strong abduction of the knee and abduction of the foot as the limb is extended.
- (4) Kneading of the muscles of the limb, first downward to the foot, then upward.
- (5) Stimulation of the abdominal circulation by strong inhibition over the solar plexus, over the abdomen, and inhibition in the lower splanchnic

region. A case of this kind should frequently be treated, sometimes more than once per day, in order to get control of the circulation.

PUERPERAL FEVER.

This is an septicemic condition and an acute attack of the febrile condition coming on with the typical chill and fever. It comes on commonly on the third or fourth day, depending on its cause. Among its causes are- (a) the presence of foreign bodies in the uterus, as coagulated blood, portions of the placenta etc., (b) the abnormal milk secretion is either increased, or, more commonly, decreased. In this case there is severe pain in the mammary region, more particularly on pressure. Among the other symptoms that we find are nausea and vomiting, aggravated constipation, suppression of urine or scanty, high colored urine, sometimes jaundice. In some cases we have many of the typhoid symptoms and sometimes having a tendency to pass into the typhoid; the pulse is rapid and the temperature is high and in this case there are general symptoms that correspond to typhoid.

Treatment, if due to septic conditions in the uterus- (1) Irrigation should be used as before mentioned using hot water or some antiseptic solution. (2) Try to get control of the blood circulation through the vaso motor system. This calls for a thorough vaso motor treatment. (3) Give thorough treatment to the spine from above down. This is one of the cases where you should try to prevent septic absorption in the brain. (4) Stimulation of the circulation thoroughly in the lower extremities and pelvis by flexion of the limb and rotation. (5) Give treatment for constipation. If it is necessary to evacuate the bowels use an injection. (6) Relieve the mammary condition by raising and spreading the ribs and apply this treatment frequently until the mammary condition is thoroughly controlled. (7) When there is a tendency to develop into mania, or in cases where there is puerperal delirium, keep up thorough circulation by frequent treatment, especially treatment in the neck downward along the spine. Keep the muscles in the neck and the lymphatic system thoroughly stimulated so as to establish free drainage of the toxic matter from the head. Keep the secretory system open, especially the urinary and skin systems, to help this make use of a hot sponge bath over the skin. Look for some lesion

in the cervical region and note particularly the tendency of the patient to hold the head to one side, indicating a unilateral lesion in the upper cervical region and try to correct the lesion. In the majority of cases of anemia a unilateral lesion is found, as the atlas, axis or third cervical, which is sure to cause incoordination of the circulation of the blood in the two sides of the brain. Case; Patient has spells of seeing with one half of the eyes while the condition was coming on, but it would not remain. This is a pressure symptom.

MASTITIS.

This is a complication often found after the third or fourth day, caused by disturbed mammary secretion, resulting in inflammation of the mammary glands and sometimes in suppuration. The inflammation does not begin in the mammary glands, but in the post mammary tissue, the symptoms being intense pain throbbing behind the mammary glands. That throbbing seems to keep the mammary glands continually irritated, and always aggravated by movement, particularly of the arm; then the mammary glands become enlarged and there is a very intense pain in them. The pain found where the glands are involved is a cutting pain. The swelling goes on increasing until the whole chest is enormously enlarged. At this stage there are constipation symptoms, as febrile temperature, rapid pulse, great thirst, burning of the skin, intense headache, insomnia, chilly and shivering sensations, especially along the spine, followed by hot flashes over the chest. In this case look for lesions involving the third, fourth and fifth ribs and the corresponding vertebrae with which they articulate; lesion of the seventh cervical and dorsal; sometimes lesions in the lower dorsal. In the latter case the inflammation is of splanchnic origin.

Treatment- (1) Get control of the blood circulation through the vaso motor treatment.

(2) Relax the muscles along the thorax, applying deep inhibition around the mammary glands until the glands float so as to free the muscles and the circulation, then give gentle vibration over the glands themselves. Give this treatment every two or three hours until there is some palliative relaxation.

(3) Stimulate and get control of the deep circulation by thorough articulation in the interscapular area, beginning at the seventh cervical; follow this by raising the arm of the patient above the head and interscapular area while rotating the arm

(4) When the acute conditions are palliated attempt to correct the lesions by giving treatment to raise and spread the ribs, particularly the third, fourth and fifth, then follow this by articulation of the spine upward through the dorsal region and the cervical region.

CYNECOLOGY

About three fourths of the cases that call for treatment in the female sex represent some kind of pelvic disturbance. Some cases are traceable to menopause; others are to be traced to abortion, overwork, mental and physical exhaustion and abnormal conditions that develop in connection with parturition. The fewer number of these cases are to be traced to traumatism. The majority of these cases when they come for treatment are in a chronic condition, hence we find typical lesions involving the lower dorsal and lumbar area regions of the pelvis or the entire pelvis.

In regard to the reason for the great number of pelvic disorders, it is probably to be traced to the delicate nature of the pelvic mechanism and the intricacy of the nerve supply of this portion of the organism. Nearly all these cases are secondary to or associated with nervous exhaustion. Nervous exhaustion is not the direct cause, but the predisposing cause, exhaustion producing a liability to lesion in connection with the stress and strain of life. This means that neurasthenic conditions, either general or local lay the foundation for lack of adjustment in the mechanical process that controls the pelvic functions.

Many cases are to be traced to early life, at or previous to the period of puberty. Before puberty in the female sex all physiological changes tend toward or to help in the evolution of the sexual organs and their functional activities. This means that the blood supply of the entire organism is drawn upon by these pelvic organs and the entire nerve supply energy is more or less closely connected with the process of pelvic maturity. This of itself is sufficient to lay the foundation for mal development and particularly for incoordination between the sexual system and the other systems of the body. This is undoubtedly the cause of most of the dysmenorrhea and amenorrheas. It is also a cause

of tumor development because the incoordination between the sexual system and the other systems makes elimination in the sexual sphere imperfect and all tumors are to be traced to lack of elimination accompanied by auto intoxication, or the accumulation of toxins brought by the blood and nervous systems to the pelvic field. This latter condition may be illustrated by the frequent use of morphine and other sedatives and hypnotics to check or control pain originating as a reflex from some pelvic condition. This means that these toxic substances like morphine, etc., are accumulative in the system and if so are accumulative in those portions from whence the pain originates.

Another cause of the pelvic trouble is the frequent interferences with the uterus by such action as curettage. My idea of curettage is that it is not only unhuman, but criminal. Nobody has thought that to curette the stomach and there is just as much reason for one as the other and the after effect is the same in both.

Another condition that is a frequent cause of these pelvic troubles is the functional disturbance of the blood and nerve supply to the pelvic organs by mental and physical conditions, e.g., hysteria and neurasthenia, although classified as nervous diseases are really pelvic diseases because they depend on or are caused by ovaritis, metritis, etc. Lower dorsal and lumbar lesions resulting from these inflammations and these lesions are the cause of the neurasthenia and hysteria and we are here dealing with secondary conditions. Obstructed conditions of the blood supply to these organs results in weak functional activity. This is a very frequent occurrence and is explained, for example, by gynecological fact, viz, that the left ovary is nearly always involved. The question, is, why? Because of the absence of a valve in the ovarian vein on the left side and also to the fact that the ovarian vein enters into the renal vein at a right angle. Here we have a double physiological condition predisposing to passive congestion of the left ovary. When we add to this the fact that the uterus tends more to the right side of the median line, increasing the tension of the blood system on the left side or dragging the uterus toward the right side and the dragging increases the tension of the blood system; (b) frequency of constipation with the rectum on the left increasing the pressure on the ovarian

circulation. The uterine and ovarian reflexes are based practically on the fact that the visceral life of these organs is controlled by the sympathetic nervous system, the sympathetic system in this function as well as in others acts as a unit so that while it is true that there is a pelvic portion of the sympathetic system which has to do with the pelvic organs the entire sympathetic system acts viscerally in each of the separate functional activities. This explains why there is such a close reflex relation between the stomach and the pelvic organs, the reflex operating in both directions, i. e., the stomach is irritated and this also irritates the pelvic organs and vice versa. We found one side of this in the obstetrical field, viz, nausea and vomiting. For example, prolonged indigestion of any type will react on the pelvic organs. Leucorrhoea is what may be called incomplete or specific metrorrhagia, very frequently caused from stomach troubles, also from liver conditions and secondary to constipation. It would be impossible to cure the case of leucorrhoea without going back to the other conditions, and it is often found the case in the Osteopathic field where a case of leucorrhoea is dried up, so to speak, but not cured, and the condition is driven internal in the structure of the body of the uterus with a history of uterine tumors and a history of chronic leucorrhoea back of it. It is as bad to dry up a leucorrhoea as to dry up an abscess, the pus matter being absorbed and may cause death by drying and accumulating in the uterus. It is better to have a life long leucorrhoea than a carcinoma condition.

Another frequent cause of pelvic disturbance is imperfect recovery or normal functional activity and imperfect replacement of organs after parturition. In obstetrics I mentioned that a frequent cause of this condition is traceable to the M.D. causing the patient after childbirth to lie on the back for several days, the uterus is in an exaggerated condition and to have the patient on the back tends to bind fast the uterus and ovaries to the posterior wall of the pelvis and it is not an uncommon case to get uterine and ovarian adhesion as a result. (Case) Patient had one child and was in the second or third month of another pregnancy, but the uterus and right ovary were adherent to the posterior wall as a result of the previous parturition process and the final result was that in the fourth month there was an abortion and it could not be prevented. After the abortion

had spontaneously taken place I removed the adhesions of the uterus and right ovary. There is no question that the persistent cases of leucorrhœa found at the menopause are the result of such conditions.

Another very frequent cause of these pelvic disturbances or nervousness. This nervousness does not have its origin in the pelvic organs but the result of the nervousness shows itself in the pelvic organs. We find, e.g., in connection with or resulting from dysmenorrhœa, the dysmenorrhœa being caused by over work, standing on the feet. Above ninety percent of the sales women have dysmenorrhœa and in the majority of the cases it is due to the long hours of standing during the menstrual period as well as at other times. The nervous condition causes lesions particularly in the lumbar and sacral regions, because (a) impaction takes place in the intervertebral substance lessening the lumen of the foramina and interfering with the nerve and blood supply; (b) Impaction of the spine in the lower dorsal and lumbar regions increases the cerebro spinal fluid accumulation and this way reacts on the pelvic organs; (c) the lumbar and sacral nerves are more liable to be interfered with because there are no nerve centers in that position of the spine, the lumbar and sacral nerves, therefore, being farther removed from the centers of nerve action.

Another common cause of these pelvic disturbances is accidental injury causing version of the uterus and later, flexions of the uterus; in some cases vertebral lesions. Version is always first and flexion second.

Another cause of pelvic disturbance may be summarized under the head of EDUCATION. The school system implies-

1. excessive activity of the brain at a period when the body physically demands all the strength which the nervous system can generate. This applies to the child in its earlier years and also at the period of puberty.

2. diversity in subjects or branches to which the mind is directed at this period represents a waste of nerve energy. What psychic principle applies not only to early education but later education as well. I think it is a scatter brain policy and divides up the energy in such a way that there must be waste. That is the reason why in the years following puberty we find very frequently amenorrhœa, chlorotic condition and nervous prostration.

3. Another point is the lack of knowledge or ignorance on the part of the developing child regarding the changes that take place and the meaning of those changes at the period of puberty. Many cases may be traced to ignorance, as taking a cold bath at the menstrual period, which establishes probably, the principle foundation for dysmenorrhea condition.

4. Improper diet and exercise. The educational period of the child demands both exercise and diet for the nervous system and this seldom if ever receives attention in the case of a child, the child is disted to make muscle instead of nerve tissue

5. Another point in the educational period of life is the inability of the country to keep pace with the blood development. This applies particularly to the respiratory field and applies more particularly to lack of proper breathing ventilation, etc. The vast majority of chlorotic conditions are more or less connected with this field.

Another point in the etiology is the mechanical side. The foundation of the development of most gynecological aces is to be traced to physiological conditions resulting from mechanical causes. The body is built on an architectural plan and as such it is divided into segments. The gynecological field is generally said to be waked off by the ilio pectineal lines, but this only makes the special field of the physiology of the pelvic organs. the true pelvis is like a bowl in which certain organs are located. This may be called the first division of the gynecology field, the second division represents the wings of the pelvis, including the ilia and all structures attached to them. The third division of the gynecological field is the abdominal cavity, including all the organs and the pressure within the cavity. The fourth division is the entire body in its mechanical relations. We will discuss this fourth division first. In connection with this field the body has--

A. A central gravity line extending from the cranium through the third lumbar to the arch of the foot. Any deviation in this line is from the third lumbar, the third lumbar is the center of parturition, micturition and defecation, representing the point from which the nerves go to the uterus and the cervix uteri. Hence, if the body is abnormal in its central gravity line the uterine organs suffer and this will give rise to

gynecological troubles.

B. Another line of the trunk extends from the chin to the symphysis pubis and should be parallel to the central gravity line. This second line may be oblique, anterior or posterior. In the anterior position the head and trunk will be well back and there will be abnormal pressure or tension on the walls of the abdomen and on poyparts ligaments resulting in displacement of the uterus, retro displacement, also ante version or ante flexion. The spine in this case will be posterior at the fourth dorsal or anterior at the third lumbar. If this line is posterior the trunk will be forward and the result is that we get one axis instead of three, the three being present if the body is normal. The result of this is (1) pressure on the pelvis viscera downward; (2) pressure on the abdominal viscera downward; (3) prolapse of the uterus because there is one axis plane and the abdominal organs press on that plain, causing, probably, proidentia. This is aggravated by constipation. In this case the spine will be posterior at the fourth dorsal and posterior at the third lumbar. In addition the abdominal muscles will be very much relaxed; pressure will also be found on the hemorrhoidal veins and on the veins of the uterus and vaginal walls; congestion of the pelvic organs will result, including the uterus, ovaries, perineum, with pudenda hemorrhage.

This means of this is that all hysecological conditions are the result of some form of displacement, e.g., flexion, version, prolapse. In anterior displacement of the symphysis line of gravity there is the lifting of the abdominal viscera and the result of that will be leaving the pelvic organs to prolapse.

C. The lines of support are— (1) a line from the coccyx to the acetabulum; (2) a line from one acetabulum to the other. To complete this triangle another line will be drawn from the cranium to the acetabulum, which practically gives us a series of triangles, representing the support of the body. The wearing of highheeled shoes will in time entirely change those triangles. The body is, therefore, supported by the two innominate bones as the bases of two lateral triangles, the trunk is supported, including the head on a basal line artificially joining the two innominates, the two angular points being represented by the supporting point of the femur articulation. Therefore, (1) if the coccyx is displaced the base line will be displaced and then the head, shoulders, thorax and abdomen

will press down towards the pelvis, causing congestion and inflammation. The line from the acetabulum to the coccyx represented by the floor of the pelvis or the perineum. (2) If either innominate bone is displaced and the pelvis is tilted this will mean the tilting of the base lines. You therefore see how important it is in pelvic troubles to get the diagnostic points of this triangle. Hence, one lateral triangle will be strong and another weak; in other words, one half of the perineum will be normal and the other half subject to pressure. This is the mechanical origin of unilateral ovarian trouble and Fallopian tube involvement. We mentioned that from the physio local side the left side will be involved. The points of weakness mechanically that is, lesions in gynecological cases are—

1. The Atlas, because it is the cranial atlanta; articulation, with a solid structure above and the trouble will show at the atlas.

2. The fourth dorsal representing the key of the upper arch.

3. The third lumbar representing the key of the lower arch.

4. The innominate bones and their attachments including the symphysis as an articulation and the acetabulum, all of these form the base.

5. The coccyx, including the perineum and all the soft tissue structures contiguous, representing the floor of the pelvis.

The parturian canal passes through the false and the true pelvis, extending to the cervix of the uterus and to the vulva as the second division. These are separable and sometimes act in opposition to one another. This canal represents a tube with a closed roof and floor, the roof represented by the abdominal contents and the floor by the vulvo vaginal orifice supported by the perineum. Inside this tube the pelvis floats within the pelvic and abdominal cavities. If the vulvo vaginal orifice is weak the pelvic floor is lost, relaxation of the vaginal walls results and this produces prolapses of the uterus following prolapsus of the walls. The cause of the excessive relaxation sometimes in anterior displacements of the symphysis line of gravity, there is a lifting of all the abdominal viscera practically opening the roof of the parturian canal and this causes the opening of the uterine canal orifice, relaxation of the vaginal walls from above downward and prolapses of the uterus. In the treatment of this condition.

In the treatment of this condition we are required to cause contraction of the perineum by treating in the lower sacral region. If the excessive relaxation begins below and moves upward we look for lesions at the fourth and fifth sacral. In the other cases where relaxation takes place from above downward we look for lesions in the lower dorsal region. These represent the two physiological lesions in the two types of prolapses. The types are distinct and the treatment for one will not suit the other. In inversion and flexion of the uterus the ligaments are at fault, especially the broad ligaments. Hence, all version and flexion are associated with the relaxation of the perineum, causing the sacro iliac tenderness, especially in ante and retro flexion.

Another type of uterine displacement is caused by neurosis or pelvic neurasthenia—the nerve fibres reach the neck of the uterus first, hence in these conditions we look for lesions in the lumbar area. The vaso motor type may present lesions in the cervical region; in vaso constriction in the lumbar region. Motor lesions are found at the second and third lumbar, particularly when uterine contractibility is involved. Where the ligaments are involved we find a surface reflex as the ligaments pass over the xiphysis pubis. Strong inhibitory pressure here causes uterine contraction and strong stimulation causes relaxation of the uterus through the ligaments.

The majority of gynecological conditions are associated with displacement of the uterus, ovaries or derangement of the ligaments and muscles below the eighth dorsal, showing themselves in sub laxations of the lumbar vertebrae or the pelvic bones. The most common lesions are contractions and relaxations of the ligaments at the third dorsal and second third and fourth lumbar. In flexion and version there is an anterior displacement of one half of the pelvis, evidenced by the attitude in walking. The position of the uterus in the abdominal and pelvic cavities is not one of support by the force of gravity of fluid organs and negative pressure. This pressure is a variety of atmospheric pressures. In relations to the organs the uterus is principally influenced by the position of the bladder and the uterus and bladder relative positions depend on the contents of the bladder. When the bladder begins to fill the bladder goes not tip; the uterus instead of

tipping is raised in a perpendicular direction, while the fundus travels farther than the cervix under the influence of change of contents of bladder, the cervix traveling about one inch, that is, the uterus is elevated about one inch when the bladder is full. Hence, when the bladder is full the cervix recedes from the vagina and the distended bladder lies between the cervix and the abdominal contents. When the bladder emptied the cervix drops down and the fundus occupies its normal position. Therefore, the normal floating field of the cervix in relation to the bladder is from one fourth to one inch. The uterine ligaments are not suspensory ligaments as they are so often called. These uterine ligaments represent four parts of ligaments- the Round, the Broad, Utero sacral and the Utero vesical. One of these pairs only is muscular, viz. the round ligaments; the others represent membranous folds with connective tissue and blood vessels. There is a minimum amount of unstriated muscle tissue present. The ligaments do not act as a support to the uterus, at least in relation to prolapsus, the reason for this being that no uterine ligament insertion is higher than its point of origin, therefore, the ligaments cannot act as supports to the uterus in case of prolapsus they simply act (a) to prevent the uterus from dropping or tipping, or (b) to prevent it from moving backward or forward. The Utero sacral ligaments cannot be drawn tensely, though the utero vesical ligaments may to a limited extent. Therefore, the uterus must be supported from prolapsus in some other way. This is explained from the fact that the uterus is of same weight as the average weight of the other contents of the pelvis; if the uterus becomes heavier it will sink down because it will displace more than its own weight. The uterus, therefore, floats in the center of the abdominal pelvic cavity. This can be illustrated from physics wood a in water will float, displacing the weight of water equal to its own weight and as the weight increases will displace more; the uterus is the same. What supports the uterus? In physics, the wood has an equal pressure all around, if the pressure is diminished it will sink, same in the uterus from lack of supporting pressure.

The abdominal and pelvic cavity, as we found before, represent a tube with a floor in the perineum. If the floor is weakened the pressure of support to the uterus is removed. This will mean, e.g., a coccygeal lesion; a rectal lesion;

some change in the symphysis pubis, or any portion of the perineal soft tissue. If the perineum is involved or if the vaginal walls become patulous then the negative pressure is altered and the uterus drops. This does not mean however, that the perineum is the support of the uterus, because the uterus ought never to touch the ~~XXXXX~~ perineum. It means the perineum is the support of the entire contents of the abdominal and pelvic cavities, of which the uterus is one.

Another condition found is the weakening of both the floor and the roof of the cavity, the abdomen and its contents representing the roof. If the abdomen loses its elasticity or resiliency instead of the abdomen being a convex surface in relation to the pelvis it will become concave and this will cause the loss of muscle force, allowing abdominal contents to press down on the pelvis and its contents and cause a prolapsed condition. This is what is in the idea of tight corset, the change of convexity into concavity, causing variation in the pelvic pressure. According to this we can lay down several points of special value in correcting uterus displacements:-

1. The uterus is a floating body supported by pressure in the cavity in which it floats. From the Osteopathic standpoint we use the word adjustment frequently and in cases of misplaced uterus the other organs must be adjusted in connection with the uterus and the use of a sound, etc. will not be of any benefit.

2. The floor of the pelvis is the natural support of all the contents within the abdominal and pelvic cavities and that means all the bone tissue from coccyx to symphysis and all the soft tissues within the structures.

3. The abdomen is either a collapse or suction pump in relation to the pelvic contents and is to be used as such in correcting displacements of the uterus. This means that the abdomen keeps the pelvic organs in position.

4. The abdomen including the abdominal muscles and abdominal contents and the perineum keep up the normal integrity of the pelvis. The abdomen and perineum being the physiological point of the gynecological field. This includes the blood and nerve supply to the abdomen, pelvis, and perineum representing the field of lesion, particularly in congested conditions.

DISCUSSION OF THE GENERAL LESIONS:

The common lesions are found from the eighth

dorsal down, the spinal lesion involving the nerve and secondarily the blood supply to the pelvic organs. Among the more common lesions we find:-

1. Ninth to twelfth dorsals, involving the blood supply to the ovaries.
2. Second and third lumbar, involving the blood supply to the uterus.
3. Fourth and fifth lumbar, involving the pelvic viscera through the nerves, via the hypogastric plexus.
4. Tenth, eleventh and twelfth ribs, acting as an irritant to the uterus and ovaries.
5. Fourth and fifth lumbar, causing anatomical weakness in the pelvis- its articulations and affecting the organs through the nerve supply.
6. Innominate lesions affecting the sacral nerves and the lumbo-sacral articulation.
7. Diaphragm lesions with a lesion of the ninth or tenth ribs, producing proplapse of the abdominal organs with pressure downward on the pelvic organs and relaxation in the pelvic field so that the blood supply is abnormal, resulting in static condition of the blood and loss of elasticity. This downward pressure of the abdominal contents generally begins with ovarian congestion.
8. Irritation of obstruction of the internal pudic nerve as it crosses the spine of the ischium in its passage out of the pelvic cavity.
9. Menstrual disturbances are associated with lesions from the ninth dorsal to the fifth lumbar; the lower ribs; rigidity of the soft tissues over the sacral nerves, rigidity and tenderness in the symphysis region. These lesions irritate or obstruct the nerve and blood supply to the pelvic organs. Most of these lesions give origin to pelvic troubles from the vaso-motor side. The vaso-motor nerves to the pelvic organs are located in two groups - (a) in the lumbar region, the vaso-motor nerve fibres passing as white rami communicantions through the pelvic plexus and the pudic nerves to the internal and external genital organs; (b) vaso-motor fibres pass from the anterior roots of the sacral nerves - I. as gray fibres with the constrictor function to the fallopian tubes, the ovaries, uterus and vaginal walls; (c) as dilator fibres in the white rami to the external genital organs, these fibres pass directly without passing through the sympathetic system -- (a) from the tenth and eleventh dorsals to the ovaries; (b) from the eleventh twelfth dorsal and first lumbar to the uterus in connection with uterine contractility, that is the function of contraction distinguished from sensitiveness; (c) from the fifth lumbar to the fourth

sacral in connection with the cervix and os uteri. These represent the three great fields of inhibition in connection with these pelvic troubles.

Motor fibres to the uterus pass through the sympathetic system—(a) from the tenth dorsal to the second lumbar, via the inferior mesenteric ganglion, the aortic, hypogastric and pelvic plexuses. These are important because the stimulation of the inferior mesenteric plexus produces contraction of the circular fibres of the uterus ~~xxxxixkxy~~ the descent downward of the uterus cervix by relaxation and the dilation of the os. (b) from the first to third lumbar via the sacral ganglion. Stimulation of the sacral nerves produces contraction of the longitudinal contraction and elevation of the cervix and contraction of the os. These are the opposite from effects produced from the lower dorsal and upper lumbar.

These are two points of importance principally in cases of prolapsus and indolence with abortion. The stimulation of the sacral nerves tends to contract the uterus and to lessen or stop hemorrhage. In case of post-partum hemorrhage this is the treatment. Stimulation of the upper lumbar dilates the os. Treatment of the lumbo-sacral regions regulates the blood supply through the vaso-motor system. Inhibition at the fourth and fifth sacral produces relaxation of the vaginal walls when these vaginal walls are very rigid.

Among the lesions most commonly found in chronic pelvic conditions are displacement of the lower dorsal and lumbar vertebrae, subluxation of the pelvic bones. In some cases lesion at the fourth and fifth dorsal through the general circulation and in the upper cervical through the general vaso-motor system.

THE POSITION AND STRUCTURES OF THE UTERUS ITSELF:

The uterus is a cone shaped structure, flattened from the anterior to posterior and lying in the pelvic cavity between the bladder and rectum. It is kept in position by pressure, retained in its normal lateral situation by the round and broad ligaments. The basal end is upward and forward, the apex end downward and backward, following the axial line of the pelvic canal and in the same axial plane as the vagina. The body and the cervix of the uterus are separated by structural external constriction. The peritoneal folding from the anterior uterine surface takes place onto the bladder. The internal separation of the body and cervix is in connection with the internal os. The an-

terior surface is more flattened than the posterior, covered over by peritoneum and divided from the bladder by the utero-vesical foldings or ligaments. The posterior surface is normally convex covered by peritoneum transversely and then divided from the rectum by intestinal folds. The lateral portions of the uterus are concave and furnish the attachments to the fallopian tubes and the round ligaments. The fundus of the uterus normally lies just below the level of the pelvic brim directed forward. The arteries which supply blood to the uterus are the uterine from the internal iliac and the ovarian from the aorta. There is frequent anastomoses in the substance of the uterus -- the terminal portion of the ovarian meeting the terminal portion of the uterine artery and forming anastomosing branches which supply the uterus proper. This anastomosing trunk supplies all the small branches in connection with the uterus; hence (a) the anastomotic trunk represents the rhythmic pulsation of the uterine blood supply, meaning uterine in the sense of the organ.

(b) The arterial blood supply is therefore a balance between the ovarian and the uterine arterial blood. Any type of inflammation, therefore, associated with the uterus will always be associated with the ovaries and vice-versa.

Any displacement of the uterus will also be felt in connection with the ovary and vice-versa.

The veins follow and correspond with the arteries enlarging as the uterus enlarges in connection with pregnancy, forming sinuses, consisting of the membranous linings of the vagina and walls of the canal channel & through the uterus itself.

The nerve supply to the uterus is

I. Sensory nerves---

a. For the contraction of the uterus as a whole --- the 10th dorsal // 1st, lumbar;

b. In connection with the contraction of the os uteri --- 1st to 4th sacral, 4th and 5th lumbar. These are the points of inhibition in connection with pain as distinguished from pangs. In controlling the contraction pangs inhibit from the 10th dorsal to the 3rd lumbar.

c. The motor fibres. These come principally from the sacral region ---

a. These fibres that go directly to the pelvic plexuses and thus pass with the blood vessels to the broad ligaments along the sides of the uterus.

b. Those that go directly with the branches of the uterine artery.

c. The majority of the motor fibres pass into the uterus, along the neck of the uterus and the lower part of the fundus. In the broad ligament the uterine nerves unite with ovarian nerves forming a ganglion at the neck of the uterus. This is a basis for local treatment in connection with the cervix. These nerves are also reached by stimulation of the hypogastric plexus which produces contraction on the uterus e.g. in the treatment of the delayed delivery of the placenta and also in the treatment of the uterine hemorrhage. These motor nerves originate from the twelfth dorsal and the first, second, third and fourth lumbar, passing into the sympathetic then through the hypogastric plexus, passing to the uterus. The uterus also may be stimulated to reflex contraction by stimulation of the sciatic nerve at the point of its central junction with the spine, or at the central end of the sciatic plexus. The uterus may also be stimulated to contraction reflexly by vibratory stimulation over the mammary area or by stimulation of the nipple. This is used in cases of subinvolution or secondarily in cases of the suspension of the nursing function, e.g., when the mother is too weak to nurse the child or in case of miscarriage. The most effective method of stimulating the contraction of the uterus when there is a foreign body in the uterus, e.g. in the case of a dead fetus, retained placenta or polypoid growth, is, -- strong stimulation in the upper dorsal followed by strong stimulation at the fourth and fifth lumbar, e.g., stimulation can be applied by placing the knee in the upper dorsal and at the fourth and fifth lumbar and pulling the body back as far as possible. This raises the abdomen from the pelvis and stimulates the expulsion of the foreign body. There is also strong stimulation of the brachial plexus and of the plexus and these act reflexly through the vaso-motor system.

The vasomotor nerve supply originates in the splanchnic area and is distributed through the hypogastric plexus. This means the area from the tenth dorsal to the first lumbar inclusive. Inhibitory treatment in this region controls vasomotor disturbances. The vaso-dilators pass out in connection with the second and third sacral nerves, representing the nervi erigentes. The reflexes in connection with the uterus are of value principally for inhibition, e.g. inhibition in

the subichial region causes relaxation of the circular fibres of the uterus; stimulation causes contraction. This treatment will also cause vaso constriction of the ovarian artery, particularly in congested or inflamed conditions of the ovaries. Another reflex is found in connection with the innominates brought out by the fact that a dislocation or displacement of the innominates obstructs or irritates the nerve fibres at the symphysis pubis and this produces ---

a. Primarily a disturbance of the uterus itself.

b. Secondly the uterine ligaments. Hence in uterine pain strong pressure over the symphysis pubis in the region of the ligaments will check uterine pain, especially when the pain is radiating along the path of the ligaments.

The general lesions found in uterine involvement are posterior or lateral curvatures in the lumbar region, especially when there is a congested or inflammatory condition, because the vasomotor nerves are involved in this case, e.g. in dysmenorrhoea or amenorrhoea, the posterior lesion is more frequently found than the lateral or the anterior. Other general lesions are irregularities in the lumbar or lower dorsal vertebrae, deviations of the pelvic bones, tilting of the innominates and outward displacements of the floating ribs. Another common lesion is an anterior fifth lumbar, found especially in congested conditions of the uterus and pelvic organs.

Uterine and inflammatory conditions are sometimes associated with great tension of the diaphragm and the drawing of it downward. This disturbs or obstructs the blood vessels as they pass through the diaphragm, causing a limitation or diminution of the blood supply to the pelvis and resulting in a static condition of the blood: also an obstruction of the nerves from the spinal cord, resulting in direct interference with the uterus.

In other cases we find the pelvis as a whole displaced, either anteriorly or posteriorly also slight luxations of the lower dorsal and lumbar vertebrae, particularly in diseases of the fallopian tubes.

In the ovarian conditions the most frequent lesion is at the eighth and ninth dorsals
GENERAL TREATMENT.

Primarily attention must be given to the pelvic cavity as a cavity, and the contents of the cavity. Seldom if ever is local treatment

called for, the only being where the uterus itself is displaced by traumatism without a displacement of disturbance of contiguous organs. This means that the traumatism may be an injury or some conditions such as may be produced, e.g. instruments as in some cases of instrumental delivery in regular parturition or abortion. Here the uterus is displaced by force without change in the other organs. Even in such cases it may be a question whether local treatment is best. General treatment in the lumbar region has the most marked effect in controlling the blood supply to the pelvic organs. This control takes place particularly through the vasomotor nerve supply to the uterus. General treatment is also called for in connection with the pelvis as a whole, and the pelvic bones, in order to coordinate the function of the nerve supply to the different organs. Treatment over the abdomen has also a general effect upon the uterus.

a. In raising the uterus in connection with the treatment of the abdominal walls and pulling up the abdominal organs.

b. Abdominal treatment also tones up the abdominal walls, increases the elasticity of the muscular tissues themselves and of the organs, strengthens the peritoneum and this way reacts directly upon the superficial structures of the uterus through the peritoneal foldings that come in contact with the uterus.

c. Abdominal treatment also helps to overcome proptosis or the tendency to proptosis.

Lymphatic disturbances are found frequently in connection with the pelvic diseases, hence a general treatment equalizes the circulation and stimulates the lymphatic system, reacting upon the pelvic organs.

In regard to internal treatment if at all necessary it should be not given oftener than once a week and then only after spinal treatment the excessively relaxed condition of the tissues is overcome and by rhythmic treatment at fourth and fifth lumbar the rhythm of the organs is restored, i.e., the peristaltic action of the organ.

When local treatment is given it should always be followed by strong inhibitory treatment in the sacral region, because this treatment applied to the vaginal walls, the vaginal sphincters and perineal tissues, these soft tissues being used to help restore the uterus to its normal condition and position.

In displacements of the uterus local

treatment should be omitted; this treatment should be given without it because it tends to overcome excessive relaxation and when the displacement is severe it makes these contiguous structures assist in replacement.

A similar treatment should also be given in laceration and in case of the presence of polypi because this treatment tends to produce stricture (constriction) hence has a tonic effect on the uterus and vaginal walls.

DYSMENORRHEA:

Strong inhibitory treatment in the lumbar region is called for, especially at the point of the lumbosacral articulation - referring here to a general treatment.

In Cramp or Spasm involving the pelvic organs through inhibition in the subischial region will relax the tetanic or contracted condition of the muscle tissue.

AMENORRHEA

Strong general stimulation of the lumbar region followed by strong stimulating treatment over the pubic bones, best applied by tapping using one hand over the other.

In case of ovarian involvement direct general treatment over the ovaries themselves with general articulation over the 5th, 9th, 10th, and 11th dorsals will be called for.

In applying these general treatments the patient may be placed on the face, back or left side. Thorough flexion of the limbs and of the limbs on the abdomen is given in all these organs. In treatment in the sacral region have the patient on the face if possible. In treating the round ligaments have the patient on the side or on the back - on the side if the one ligament only is involved, the side on which the ligament is involved. If both ligaments are involved give treatment to both at the same time - simultaneously and in that case place the patient on the back. Another point in the position of the patient for treatment is what is called the knee-chest position. This position is applicable in prolapsed condition of the uterus. The patient should take the position periodically.

In placing the patient on the table for this position in treatment have her lie on the face with the knees drawn up and somewhat separated. Then begin to manipulate - (a) over the sacrum upwards, first inhibiting, then giving a rhythmic treatment; (b) followed by articulation upward in the lumbar

region; (c) give inhibitory pressure in the symphysis region, following this by a deep, slow kneading movement over the abdomen. Begin kneading just above the symphysis and knead as though passing from the symphysis over toward the posterior lumbar region diagonally; (d) stimulate strongly the second third and fourth lumbar. This is the region where you can get the direct nerve that go out to these pelvic organs and that stimulates function action of these nerves; (e) if the patient is chilly or crampy stimulate strongly the eighth dorsal and in the cervical ganglion region. If the condition becomes very severe apply strong stimulation inhibition to the superior cervical ganglion; (f) in severe leucorrhoeal conditions associated with these displacements apply continued or frequent inhibition over the round ligaments. This is the best specific treatment for leucorrhoea of any type. strong inhibition up to the point of desensitizing over the round ligaments.

If the eyes of the patient are involved have her refrain from using the eyes as much as possible and treat as you would for a congested condition.

When there is rigidity of the vaginal muscles (sphincters) apply strong inhibition at the fourth sacral.

In hemorrhoidal conditions give treatment at the first sacral and fourth and fifth sacral to control the internal and external sphincters of the rectum.

SPECIFIC CONDITIONS.

(1) In relation to the menstruation. This applies particularly to dysmenorrhoea and amenorrhoea. Normal menstruation should be without pain. The field of pain is from the tenth dorsal to the fifth sacral, representing some reflex irritation involving the pelvic plexuses. Other conditions, like headache, heart and lung trouble, etc. arise as reflexes, probably largely through the sympathetic system. In treating the menstrual conditions in general always work through the sacral nerves because these represent direct nerve connection with the organs.

Dysmenorrhoea or painful menstruation is generally caused by - (1) Malformations of the uterus, either structural or by contraction of the cervix of the uterus; (2) Displacement of the uterus, particularly some form of flexion (flexion and version are simply two stages of the same process; as before mentioned we get version in later periods of life). (3) Inflammatory conditions of the uterus,

especially when these become chronic catarrhal condition. The only incurable condition is that of structural stenosis. In functional stenosis there is a curable condition. In case of aggravated malformation the only treatment is a surgical one.

(4) Sometimes dysmenorrhea is due to a prolapsed condition of ovaries followed by ovarian congestion
TREATMENT OF DYSMENORRHEA:

1. Inhibit over the round ligaments to relax the cervix and strong inhibition in the lumbar region, especially at the fifth lumbar, for the pain in the back which is often very intense. Through these round ligaments we reach the intrinsic ganglionic nerve supply in the muscular coat of the uterus.

2. Strong inhibition to equalize the blood supply in the pelvic cavity. Begin this treatment by strong ~~ix~~ stimulation in the upper cervical followed by inhibition in the lower splanchnic area and then articulation at the ninth, tenth and eleventh dorsals to reach the ovarian blood circulation.

3. In cases where there are cramping spasms associated with the uterus (meaning only in the uterus) use strong inhibitory treatment over the symphysis pubis. This relaxes the circular muscular fibres of the uterus. This is the strongest treatment we have in a very aggravated case of dysmenorrhea.

4. Inhibit strongly over the sacral nerves particularly in very severe cases: also inhibit the pudic nerves as they pass over the spine of the ischium.

5. Stimulate or give rhythmic treatment at the fourth sacral to cause contraction of the levator ani, the elevate the perineum, vaginal walls and the uterus, particularly where there are strong bearing down pains. This point also reaches the vaso-motors to the sacro-median artery. In these cases the perineum is relaxed, pulling down all of the structures in the abdominal and pelvic cavities. In this case the abdomen becomes flat and rigid losing its elastic power. Here treat the abdomen to cause the abdominal muscles to become elastic.

6. In chronic dysmenorrhea the lumbar region is usually posterior and straight. Here correct the lesion.

7. In case of snills stimulate the upper dorsal so as to reach the vaso-motors to the lungs (second to seventh dorsals); also stimulate the cervical ganglia from above downward

8. When cramps are found in the legs and feet free the circulation through the legs, using greta-

tion, kneading, etc. Some say in dysmenorrhoea you should not rotate the limbs but I have found that rotation does not affect menstruation. If the patient becomes very nervous use strong inhibition in the occipital region.

9. In case of severe flooding at the menstrual period give very strong stimulation over the round ligaments.

10. Between the menstrual periods give treatment to raise the uterus - put the fingers of both hands in over Poupart's Ligaments and press in deep and then pull up as if pulling on the uterus.

11. In cases where the bladder is involved try to reach the blood supply by the internal iliac artery and their nerve supply at the second and third lumbar and third and fourth sacrum in connection with the hypogastric plexus. In some cases, particularly at the time when menstruation is first established, there is a urinary incontinence. In this case the treatment will apply to cases in children. There is irritability of the bladder at the menstrual period. Little children from two to five years of age will have trouble and this will settle down at the menstrual period. This condition should be corrected in childhood and this treatment will apply to any period.

a. Treat the blood supply in connection with the internal iliac. This treatment also applies to boys where there is tendency to hydrocele development, which is found frequently developing at puberty in the male sex. Case; Started in urinary incontinence at age of about thirteen years.

b. Raise the bladder by treatment over the abdomen, inserting the fingers just above the epiphysis and pressing down deep while flexing the limbs and then pulling on the abdomen. In the grown female you can take the bladder and hold it above the symphysis and permit the examination of the uterus and not use the internal vaginal examination.

c. Inhibit strongly right over the epiphysis. Also applicable in hydrocele, when you follow inhibition with light tapping treatment over the epiphysis.

d. Look for lesions at the third and fourth lumbar. A very typical lesion.

e. Treat epithelically at the third and fourth sacral to reach the neck of the bladder and prothral sphincters. This treatment is of intense importance in prostatic enlargement, where the average M.D. uses a catheter constantly.

f. In case of the prolapse of the pelvic floor treat thoroughly at the fourth sacrum.

g. In case the kidneys are involved treat for the kidney condition as found under the head of kidney troubles.

AMENORRHEA:

This may be due to malformations in connection with the uterine organs— functional disturbances caused by cold, exposure, overexcitement, overexhaustion, or, reflexly from the kidney or stomach. The lesions are found in the sacral and lumbar regions, sometimes involving the ovaries.

TREATMENT;

In case of ovarian involvement treat for a venous condition or congestion directly over the ovaries and at the ninth, tenth and eleventh dorsals, reaching the vaso motors for the ovarian organs.

2. Strong stimulation in the lumbar region with strong stimulation over the blood vessels in the iliac region.

3. Strong articulation of the vertebrae downward (lumbar vertebrae)

4. Attempt to move the pelvic as a whole and the pelvic bones. Place the patient on the back put one hand under the patient in the sacro sacral region, pushing the hand and arm far enough to catch the anterior superior spine of the ilium on the opposite side, the flex the patients knees and put the other arm under the flexed limbs about the middle of the forelegs so as to catch the entire lower extremities— pull downward with the first hand, rotate and raise the limbs with the other are at the same time. Treat both sides alike.

5. See that the floating ribs are normal and if normal articulate. Always look out for the floating ribs in ovarian troubles and also in dysmenorrhea which is nearly always found in ovarian involvements.

6. Give strong tapping treatment over the symphysis pubis and repeat it frequently.

7. Strong stimulation of the general circulation. Begin at the vaso motor in the upper cervical, then give splanchnic inhibition that dilates and pulls the blood down into the abdominal cavity. Then give local stimulation over the abdominal aorta, pulling up the abdominal aorta. This increases the pressure on the blood as it is passing downward to the uterus. Follow this by direct treatment over the ovaries and uterus. Some criticize this treatment of the abdominal aorta, but it is a good treatment. Get to the bifurcation, flexing the limbs of the patient and after getting the fin-

gers in at the bifurcation push them in well and upward toward the diaphragm.

8. In irregular menstruation, which is sometimes normal and sometimes abnormal, give the same treatment but be particular in giving at least two treatments within a few days preceding the menstrual period. This is one case where you can treat very much as once discussed in epilepsy, i.e., pay no attention to treatment until just before the time for menstruation. Also in cases of suppressed menstruation. Also in cases of suppressed menstruation do not treat for the condition until at the time when the menstrual period should take place, or in a severe case of regular intervals, or treat one or two days before, or treat a week previous to the monthly periods.

OVARIAN DISTURBANCE:

We must distinguish between (1) Ovulation and (2) Menstruation. These are not correlative terms—ovulation is a function of the ovaries; menstruation is a function of the uterus. The disturbance of the ovulation function is one of the common causes of sterility, representing a functional disturbance of the ovaries where the ovaries are not normally in a state of functional activity. Lesions may be looked for at the tenth and eleventh dorsals or directly in connection with the hypogastric plexus, or in connection with the internal iliac and ovarian circulation. Aside from conditions caused from imperfect development ovarian troubles are caused by lack of proper nerve and blood supply. In relieving this condition—

1. Attend to the stimulation of the general circulation, more particularly treatment in the vaso circulation, more particularly treatment in the vaso mot or region, in the lower dorsal.

2. Local treatment in the abdomen over and around the ovaries, especially treatment in connection with the abdominal aorta at the point of its bifurcation.

3. Inhibitory treatment at the eighth, ninth and tenth dorsals, looking out particularly for tender points in that region. The tender points are more particularly found (a) in connection with displacements of the innominate; (b) in connection with the sacro iliac articulation; (c) in connection with displacements of the floating ribs.

4. Give thorough treatment in the lumbar region, articulatory, to get strong action. In this case we have the patient on the side, flexing the limbs on the abdomen, press against the flexed limbs to get leverage for articulation of the lumbar vertebrae.

5. Treatment over and around the round liga-

ments, the patient may be on the back or on the side, First apply pressure over the ligaments as they pass over the pubis, then when they are relaxed raise up and move the ligaments in connection with the flexion and rotation of the limbs, giving strong stimulation at the same time over the symphysis.

These points cover all of the functional conditions that are found in connection with pelvic disturbances. The balance of the gynecological field may be classified under-

- I Displacements of the Uterus.
- II Menstrual and Hemorrhagic conditions
- III Inflammatory conditions
- IV Abnormal growths
- V Miscellaneous.

Displacements of the Uterus;-

Uterine displacements represent various degrees of variation in the position occupied by the uterus in the abdominal and pelvic cavities. The uterus normally lies in a state of equilibrium in the pelvic cavity. Equable relations, both organic and pressure are established within the pelvis. Anything that tends to destroy or disturb this equilibrium so that the uterus lack support, pressure or blood supply- not in the sense of blood supply furnishing nutrition; but blood supply to the uterus giving it weight or gravity. If the abnormal pelvic basis is destroyed by perineal weakness or laceration, or rectal weakness or vaginal over relaxation then the uterus as a whole will lack support and the upper part of the uterus will find its base of support on the lower part of the uterus. Here is the reason for a previous statement that the first variation from normal in the uterus is flexion and may or may not be followed later by version. The first stage is flexion because the cervix becomes the base of support for the other part instead of being supported by the perineum.

If the retentive power of the muscle in the abdominal walls is impaired or lost as that in stead of the abdominal muscles holding the uterus up by maintaining equable pressure all around it then the weight of the abdominal contents and the gravity of the uterus will cause displacement. The causes for the loss of this abdominal pressure keep this point in mind as to the reason for not using replacement of the uterus, as is common, and is easily harmful; it is an abdominal pressure condition, save in a traumatic case and this is seldom found-- are to be found as the after effects of childbirth, miscarriage, abortion, nervous

debility, acute forms of diseases, sudden and violent over exertion. Prolapsus of the uterus is impossible without at least a tendency to retroflexion and the tendency to retroflexion is simply incoordination between the fundus and the cervix. The normal uterus is almost parallel to the vaginal canal. Therefore, normally, prolapsus is impossible because the uterus lies immediately above the bladder in relation to the pubic bone. Retroflexion or the tendency to it, or retroversion may occur without prolapse. After the uterus descends about an inch from its normal position the so called suspensory ligaments become really suspensory ligaments, hence, the only suspensory function of the ligaments is when the uterus is partially prolapsed. In order to prevent complete prolapse of flexion or version the insertion of no uterine ligament is higher than its origin if the uterus is normal, but when there is slight prolapse the ligaments are put in tension. Therefore there is a tendency-(a) to relax some of the ligaments (b) the prolapse of the uterus still farther or its flexion or version is a matter of time and the greater relaxation of some of the ligaments? This differs entirely from the view taken in most gynecological cases and gynecologies but it makes it easier to correct conditions that from the usual views.

The variations in the malposition are variations of degree. the gravity of the uterus making the uterus fall and in falling occupy some abnormal position corresponding with the conditions of the other structures in and around the pelvic cavity. I mean that if you have traumatic conditions of prolapse if you could maintain the tone of the perineal wall, of the rectum and of the vaginal walls it would be a physical impossibility to have flexion or version but only a partial prolapse. In practically all cases there is a relaxed condition of the vaginal walls, the perineal support is impaired or destroyed; the vaginal walls collapse, the anterior wall particularly begins to project downward and the posterior walls simply drop. This is the cause of cystocele and rectocele, that is, the descent of a pouch into the vulva from the bladder and rectum. Here most gynecologies indicate the use of caustic, surgery, etc., to get rid of cystocele and rectocele conditions, but we should not, but we should go back to the prolapsed condition. If cystocele and rectocele become tumorous sometimes surgery may have to be resorted to.

When the vaginal wall begins to descend there is a drag on the lower part of the uterus. This is aggravated by (a) static condition of the blood in the uterus and vagina, and (b) by the gravity of the bladder at this stage. The only suspensory function of the ligaments now comes into play and it may or may not cause trouble. The suspensory function of the ligaments tends to retain the fundus of the uterus in position, allowing the cervix to take care of itself. The ligaments gradually stretch and the cervix also stretched until there is an increase sometimes of several inches. In some cases this appears like a cord like structure connecting the fundus with the cervix.

In treating these conditions it is necessary to remember their anatomical changes because the apparent malposition is in reality- (a) the abnormal position of the uterus; (b) the abnormal anatomical variation of the uterus. This means that in long standing cases there is always elongation of the supra vaginal surface or an entire change in the anatomical shape of the uterus and in such an condition the misplacement is an absurdity and it would be impossible to retain it in place. If the variation is slight the retraction to normal shape will be simply a matter of toning the organ. In other cases continual treatment will be called for to tone the organ and re establish the fundus and cervix coordination. You can see the importance of this if you remember a previous statement that the main nerve supply comes to the fundus from the cervix.

During the course of involution following parturition if the posterior wall involutes more quickly than the anterior, producing anterior contraction. This is a frequent cause of retroflexion following the tendency to prolapsus, then uterine prolapsus occurs to a certain extent so that instead of pressing posterior it presses anterior, then the fundus is liable to be turned backward and it will depend in this case on the extent of incoordination between the fundus and the cervix whether there is retroversion or retroflexion. This explains why very frequently in the same case there is both retroversion and retroflexion. To distinguish between ~~thaxfundaxand~~ these two we must discover the relation between the fundus and cervix and the relative position of the fundus to the pelvis. If instead of finding the cervix impinging backward toward the rectum, we find it turned anteriorly while the fundus is in the opposite direction, then there is retroversion without retroflexion and this is a rare condition.

In simple retroversion the best position for diagnosis is with the patient standing, because often with the tissues very relaxed, where the patient is lying on the back the uterus ascends while in the upright position the uterus descends and this difference in position may amount to several inches.

Anteflexion and anteversion are very rare, especially the latter. These are recognised by the fundus impinges well down back of the pubic bone. The reason why anteversion is rare is because the uterus cannot antevert without pushing back into the pelvic cavity and the cervix impinging on the rectum. If anteversion exists it is one of two types- (a) congenital, in which there is a uterine malformation, and more than probable when the patient grows up there is fundus adhesion. (b) Irregular involution following parturition or miscarriage. In this case there is atrophy of the uterine tissue at or opposite the internal os. In long standing cases of anteversion and retroversion there is always atrophy of the concave side opposite the internal os and in treating these cases we must remember this point, because it is necessary to develop the uterus to its normal before correction is possible, or, in other words, the organ must be toned up before it can be replaced.

PROLAPSUS:

This is the term generally used to include all forms of dropping or falling of the uterus, whether partial or complete. Sometimes the word relaxation is used where the uterus partially descends, that is descends to the upper half of the vaginal canal.

PROCIENDENTIA:

This is the term used when descent of the uterus takes place to the labia; prolapsus where the uterus descends externally. In all cases or forms of prolapsus there is, or is a tendency, to, a posterior displacement of the anterior body cavity line, that is, the line from the symphysis of the chin to the symphysis pubis.

The spinal lesions in different forms of prolapsus are located in the lumbar and sacral regions. Prolaps of the uterus may or may not be associated with prolapse of the vaginal walls. Prolapsus is always attended with a dragging down sensation, felt at the lower part of the abdominal cavity, causing weakness of the back, particularly in the small of the back, and sometimes great difficulty in walking. The cause of this is the weakening of the abdominal wall producing traction forward or tension backward in the dorso lumbar region

of the spine.

Another condition that is found is an increase in the mucous secretion of the utero vaginal field, sometimes developing into leucorrhœa. This is produced by distension and eversion of the vaginal walls, the weakening of the vaginal sphincters and the relaxation of the vaginal and uterine ligaments. These general conditions produce relaxation of the entire wall structure of the utero-vaginal tract. This weakens the sphincters, distending the ligaments, causing the loss of tone in the abdominal and spinal muscles. This is the reason why prolapse is so frequently associated with parturition, because the loss of tonicity in the partially involuted organ and partially contracted ligaments results in the failure of the uterus to resume its normal position.

The lesions usually found are those in the lumbar and lower dorsal regions, especially if the condition is associated in any way with vaso motor disturbance. Sometimes we find lesions in the upper dorsal region and even in the cervical region, these being probably associated with the anterior displacements of the anterior body line. The nature of the lesions in the lumbar region are more frequently lateral, especially to the left side. The lesions in the lower dorsal are generally posterior and in the cervical and upper dorsal either lateral or posterior. If the abdominal muscles are weakened there is not sufficient pressure to keep up a uniform compression on all sides of the ~~max~~ uterus, hence, the uterus is liable to fall toward the side of the weakness. In some cases both the abdominal muscles and the vaginal walls become weakened.

The majority of prolapsus cases are associated with constipation, hemorrhoids, nervous debility, abnormal menstrual condition, abortion or miscarriage and a few are secondary to traumatism. In all of these cases there is a weakening of the muscular system. In some cases this is caused by septic or toxic conditions of the blood. All cases of displacement are associated with weakness of the back, indicating the primary cause of the trouble, viz., traumatism and there the traumatism is traceable to overwork, overstrain of the muscles of the back, particularly through the lumbar and sacral regions. The increased tension causes contraction of the muscles and these press on the nerves, interfering with the impulses from the spine to the uterus, secondarily obstructing the circulation and

later weakening the abdominal muscles, the vaginal walls and the perineal soft tissues.

TREATMENT

There are three points to be particularly aimed at--(1) the correction of lesions and the removal of obstruction conditions that interfere with the blood and nerve supply; (2) the restoration of normal tonicity to the local parts involved; (3) the reestablishment of the coordination between the local parts and the rest of the body. To secure these points in the treatment.

1. Coordinate the blood supply between the pelvis and the rest of the body. In doing this begin in the upper cervical region and treat to the upper lumbar region, according to the condition found.

2. Rhythmic treatment over the muscles along the dorsal, lumbar and sacral regions.

3. Thorough relaxation of the sacro iliac ligaments with the articulation of the lumbar vertebrae.

4. Treatment in connection with the innominates, the special point being articulation or movement of the innominates.

5. Correct the lesions, looking particularly for sub luxations in the lumbar vertebrae.

Place the patient on the face and articulate the spine, beginning at the ninth dorsal, using the innominates as leverage. Very frequently there is a right lateral displacement in this case the muscles on the right side are rigid. To get relaxation begin in the sacral region, applying strong pressure close to the spinous processes, pulling the limb on the same side up backward, giving as strong tension and extension as possible, continuing this treatment upward to the dorsal region. In some cases there is posterior displacement of the lower vertebrae. In this case apply the pressure of the thumb over the spinous processes, pulling the limb up backward, or place the patient on the side, flex the limb on the abdomen and apply strong pressure against the lumbar vertebrae. This is sometimes spoken of as the "jack knife" position.

6. Give the patient local treatment especially for the muscles, both spinal and abdominal--

(a) place the patient on the side and manipulate the muscles outward and upward from the ninth dorsal down through the lumbar and sacral regions; give very deep movement to reach all of the muscles and the nerves as they pass out of the foramina;

(b) with the patient on the back give strong flex-

ion and rotation of the lower limbs in order to stimulate strongly the blood and nerve supply, to extend and stretch the weakened muscles and to increase the contractile elasticity of the perineal soft tissues; (c) do not use local replacement of the uterus or tampon treatment, but allow the nerve and blood supply to restore the normal condition of the muscles and ligaments and the normal condition of pressure and then the muscles, ligaments and of pressure and then the muscles, ligaments and pressure will replace the organ; (d) restore the normal condition of the pelvic contents by manipulation of the abdominal walls in connection with flexion and rotation of the lower limbs and the uterus will restore its normal position in relation to the other organs; (e) with the patient on the back treat the round ligaments, and following this insert the fingers on the median line side of the round ligaments, pushing them down deep so as to reach the uterus in connection with the flexion of the limbs, pulling up on the uterus, symphysiward while the limbs are straightened out on the table and in some cases dropping off the limbs one at a time at the side of the table; (f) treat for constipation, hemorrhoids, &c., and other conditions found as complications. In a case of this kind give treatment every second day.

RETROVERSION:

Is a displacement of the uterus in which the fundus of the uterus drops down or descends toward the sacrum, the os ascending at the same time and inclining toward the pubis.

ANTEVERSION

is a condition in which the fundus falls forward, when the os drops backward.

VERSION:

The uterus following upon prolapsus turns inside out.

ANTEFLEXION:

The body of the uterus is flexed or twisted forward on the cervix which remains normal.

RETROFLEXION:

The fundus of the uterus is displaced backward while the flexion of the uterus takes place posteriorly.

Vaginal Prolapse

is found when the upper part of the vaginal wall or canal becomes relaxed and drops down over or protrudes into the lower part of the vaginal canal.

All of these conditions represent some modification or sequence following a partial or com-

plete prolapse. This means that the various forms of flexion and version are impossible unless there is a condition of prolapsus. This makes it difficult in most cases to differentiate one form from another.

Normally the external os uteri opens transversely at the lower end of the cervix. In multiparæ there is slight change, the external os becoming more or less circular, the cervix being flattened antero posteriorly. The two points, viz; (a) the transverse direction of the os, and (b) the position and condition of the cervix, are the two points which are essential to the diagnosis of a displacement of the uterus. I mean by the condition of the cervix the tendency to flattening or the normal circular condition of the os. If the transverse direction of the os is changed to an oblique direction with the pelvic cavity it indicates a change in the position of the uterus. In this case there is a turning of the uterus to one side or the other and this is always accompanied by-- (a) prolapsus, or (b) version of the uterus in one direction or another-- (1) when the cervix inclines forward and upward the fundus of the uterus goes backward and downward, falling against the rectum. In this case the fundus of the uterus can be palpated through the posterior vaginal walls; (b) if the uterus in dropping backward is turned so that the fundus is directed toward the sacro iliac region then there is a lateral deviation of the uterus; (c) when the cervix inclines backward and upward the fundus of the uterus drops anteriorly, in this case falling upon the bladder and being palpable through the anterior vaginal wall, in which case there are always bladder symptoms. In determining the malpositions we must remember that (a) the fundamental condition which makes malposition possible is some degree of prolapsus; (b) to determine the degree of flexion or version we must note three things-- (1) the direction of the axis of the os; (2) the direction of the axis of the cervix; (3) the position in which the fundus is placed and the direction of the axis of the fundus. Here I mean by axis whether the organ is straight or bent on itself, giving a curved axis. When these three things are known there is no difficulty in determining the malposition, which, it must be remembered, is superimposed on the prolapsus. The different forms of flexion are the most difficult to diagnose but these depend on the relative position of the cervix and fundus, e.g., if the cervix is normal,

and the fundus thrown backward we have retroflexion. In this case the uterus is bent over on itself; To determine whether this bending is present we require to note the space between the cervix and the fundus, or what we have previously called coordination between the cervix and fundus in position.

RETROVERSION

Here there is displacement of the uterus in which the fundus descends toward the sacrum, the os toward the pubis. We must remember that the uterus is a freely movable organ, its position depending on the position and condition of the contiguous organs and structures. The normal field of movement is quite extensive; the mobility makes it possible to consider a uterine misplacement as the cause of the many symptoms that accompany a misplacement. The reason for this probably is; (a) the uterus normally lies in slight ante flexion and, (b) the mobility of the uterus is a mobility around this ante flexion position, mobility taking place within the limits of the abdominal and pelvic pressure conditions. In think this point is lost sight of by most writers, i.e., the uterus normally having slight ante flexion.

The causes of retroversion are primarily the causes of prolapsus, such as traumatism, congestive, static and inflammatory conditions, cervical lacerations. These causes tend to produce a uterine sub involution with the result that the weight of the uterus dislodges it from its slight ante flexion and throws it toward the posterior part of the pelvis. Another cause is the loss of pelvic support by laceration or relaxation of the pelvic floor. Another frequent cause is strain caused by tension of the limbs and pelvis, or by a fall. This produces pelvic congestion, pelvic peritonitis and the displacement of the uterus. Among the other causes we find spinal lesions interfering with the nerve or blood supply; pelvic congestion interrupted menstruation, whether caused by cold, injury or nervousness; relaxation of the abdominal muscles, causing the pressure of the abdominal contents on the uterus; lack of tonicity in the perineal tissues; improper forms of dothing, and another cause not infrequently found is polypoid development and tumorous growths within the uterus itself; also the use of certain drug substances, e.g., certain cathartics, etc., having a special affinity for those tissues.

SYMPTOMS

In all these misplacements there is some

change in the abdominal muscles, generally an excessive relaxation, resulting in the loss of tone. In retroversion the most common symptom is constipation, caused by the pressure of the uterus on the rectum. Another symptom is difficulty in micturition, caused by the pressure on the bladder, ureters and urethra. We also find congestion of the uterus and if this condition persists for any length of time there is an inflammation followed by a thickening of the walls. In very severe cases the patient is not able to lie straight out on the back but assumes the semi recumbent posture. There is also tension and tenderness over the abdominal muscles. In other cases the abdominal muscles become excessively relaxed. Tenderness becomes so aggravated that the patient is unable to bear clothing weight; the pain in the back is also intense. This is due to extreme position occupied by the uterus, the fundus lying back on the sacrum and the cervix on the symphysis pubis. In these displacements the ligaments become suspensory. This seems to be the reason why the uterus has more ligaments than any other organ-- (a) for the support of the uterus; (b) to regulate the rhythmic oscillations of the uterus. All the ligaments do not exert equal force of resistance; the principal ligaments for support is the utero sacral. If these utero sacral ligaments retain their normal tone retroversion or the partial prolapsus necessary to retroversion is impossible. This accounts for the presence of sacral pain and it means in the treatment that the principal thing to do is to relax the utero sacral ligaments. The round ligaments of the uterus limit the mobility in connection with the bladder function, i.e., filling and emptying it, etc. The broad ligaments act chiefly as a media for supply of blood to nourish the uterus, these broad ligaments enlarging and becoming longer in the development of pregnancy, as more blood is demanded at that time. The utero sacral ligament is a muscular structure with sufficient resisting power to prevent the cervix from dropping down. The chief cause, therefore, for the retro displacement of the uterus is this failure of ligamentous involution following parturition. That applies particularly to the utero sacral and broad ligaments which are muscular. There is hypertrophy during pregnancy, then the uterus involutes after parturition; the ligaments must involute also the failure to do so resulting in displacement.

Among the other symptoms we find leucorrhoea and menstrual disturbance associated with metri-

tis and endometritis. Other symptoms are intense backache, dragging down toward the sacrum, great discomfort in the back and to the pelvis; severe constipation and constant or periodical occipital headache. The patient is always exceedingly nervous. Another condition found in retroversion is sterility. Direct examination of the cervix with the patient on the back indicates that the cervix is downward and backward. Sometimes the fundus lies so low in the posterior part of the pelvis that it lies below the level of the cervix. In simple cases the fundus is simply straightened from the normal slight anteflexion. In other cases the fundus is bent backward.

TREATMENT: The main points are--

1. Stimulation of the circulation by lifting the uterus up in the pelvis manipulating through the abdominal wall.

2. Attention to the condition of the ligaments. The treatment to elevate the uterus should be given daily until the uterus is held high enough in the pelvis to stimulate the circulation and assist involution.

3. Surgeons claim that on account of the insufficiency of the utero sacral ligaments, surgical procedure must be taken to shorten the ligaments. This, however, is unnecessary, because involution or contraction of the ligaments can be produced by treatment.

4. In case of metritis or endometritis as a cause-- this must be attended to from the standpoint of drainage in addition to the raising of the uterus to relieve the obstructions causing the congestion and inflammation.

5. Place the patient on the back, flexing the limbs at the knees, in order to relax the abdominal muscles, apply pressure with one hand over the perineum, with the other hand apply pressure over the abdomen--(a) inhibitory to begin with- (b) make a light rotatory pressure in large circles, always upward, in the field of the abdomen, gradually diminishing the size of the circles and increasing the amount of pressure. Continue this treatment until thorough relaxation of the abdominal muscles takes place, working down deeply until you reach the bend of the uterus. Treatment ought to be given twice weekly and they should be short treatments. Treatment should not be suspended during the menstrual period, in many cases you get a better corrective period, in many cases you get a better corrective effect during the menstrual period, because the uterus is more relaxed at that time.

ANTROVERSION.

This is a condition that is rarely found. Among the symptoms present the most marked is difficulty in walking. This is caused by the sensation of pressure and weight in the pelvis, particularly at the anterior portion of the pelvis. Among the other symptoms are difficulty in defecation and micturition. Among the causes are nervous condition, over strain of the muscular system, uterine congestion, subluxations of the lumbar vertebrae or of the sacrum. Frequent micturition is the common symptom, due to the pressure of the uterus on the bladder. Uterine hemorrhage is also found on account of the incoordination between the cervix and the fundus, the cervix being thrown back upon the sacrum and the fundus thrown forward on the symphysis.

INVERSION.

In this case the uterus drops down externally, that is, there is an aggravated prolapsus with an inversion of the internal wall of the uterus. Commonly it is due to traumatism, e.g., the violent removal of the placenta, especially in connection with strong placental adhesion. It is also sometimes secondary to torpid conditions, particularly involving the upper part of the fundus, or tumors located above and outside of the uterus, pressing down the fundus of the uterus and causing the inversion. In some cases there is a prolapsus of the bladder in connection with uterine inversion. In this case the bladder ceases to perform its visceral function on account of its tension and the lack of the abdominal muscle assistance. The primary cause of the inversion is the excessive relaxation of the uterine walls, secondary to partial prolapsus which is found in all these cases.

Among the symptoms found the most important is impossible micturition, due to excessive relaxation of the uterine and vaginal walls, secondary to pressure on the bladder. Another marked symptom is pelvic pain and intense pain in the symphysis, starting at the median line and passing around laterally. Other symptoms are exhaustion and weakness of the patient, continued tired feeling in the small of the back, periodical uterine hemorrhage and leucorrhoeic conditions.

ANTEFLEXION

This is a condition that is marked principally by great contraction and rigidity at the point of the flexion. This is so marked in most cases that the rigidity feels to the patient like a hard tumor.

The principal symptoms are the disturbance and irritation of the bladder, local inflammation

and febrile conditions, diminution in the size of the os with marked elongation of the cervix. This is due to the strong tension of the flexed body of the uterus and sometimes to strong muscular action.

Among the lesions found the principal one is in the lumbar region or involving the sacrum, dysmenorrhœa and frequent micturition being the most common irritations found.

RETROFLEXION.

This is always found along with retroversion and never along, consequently the symptoms are much the same. They are principally strong dragging pain in the back causing the patient some times to faint and when continued representing a neurosis with anemic conditions of the uterus. Another very marked symptom of retroflexion is long and painful menstruation periods, not infrequently loss of periodicity, e.g., one in three or even to weeks. Another marked symptom is great irritation of the uterus, caused by the twisting of the cervix the neck of the uterus being dropped down to lower part of the vaginal canal. In some cases the fundus of the uterus appears as a hard tumor in the posterior portion of the vagina.

LATEROFLEXION.

This is caused by inflammatory condition of the uterus. Sometime the inflammatory condition involves the fallopian tubes and the ovarian and sometimes even the spleen and liver. The latero flexion consists of the bending of the uterus to one or the other side on account of the direct pressure of the other organs; the weight of the organ itself; lumbar or sacral displacements.

Among the conditions which may cause these displacements and which may exist without the displacement, at least for a time, we find polypoid growths or tumors on the surface wall of the uterus or on the vaginal wall. These may be found in all degrees of development from the soft and spongy to the hard and rigid. These are the result of obstruction to the circulation, relaxation of the walls, relaxation of the uterine ligaments or lesions in the dorsal, lumbar, sacral, or innominate regions.

TREATMENT OF THESE DISPLACEMENTS

The uterus is normally supported by the tonicity of the perineum and the vaginal walls. It is also maintained in position by the abdominal muscles. When the vaginal walls, abdominal muscles and perineum become greatly relaxed we have the preparation in partial prolapsus and partial relaxation of the uterine ligaments for these other displacements. In this partial prolapse and relaxation

there is a constant tension on some of the ligaments, resulting in their elongation. Following this the abdominal muscles become weakened and are unable to contract with sufficient force to maintain uniform compression and equable pressure upon the uterus. This change of pressure is more marked in certain positions of the body trunk, hence the uterus is liable to fall forward or backward or to incline laterally when one position of the body trunk is changed. In extremely nervous conditions this variation in the body posture gives rise to changes in the uterus, the uterus being liable to tip or fall toward the weakened side or to tip transversely across the pelvis. The meaning of this from the standpoint of treatment is that the cause of these misplacements is to be traced to nervous debility or neurosis, lack of tone in muscles and ligaments and mucous membrane, interference with circulation and drainage, resulting from these other conditions. Hence, in the treatment the purposes to be kept in view are (1) Restoring the normal condition of the nervous system in order that the current of nerve impulses from the brain and spinal cord to the local organs, uterus, etc., may be normalized.

(2) Restore tonicity to the muscles, ligaments and mucous membrane locally in the pelvic field.

(3) Building up the trophic conditions of the local parts through the nerve and blood supply.

This means in treatment-- do not replace locally the uterus, either with the hands or instruments. Such replacement is superfluous and liable to result in greater irritation unless the other causes of conditions are properly attended to.

All cases of uterine misplacements are associated with other conditions such as hemorrhoids, constipation, nervous debility, malmenstrual conditions, lack of muscle support, lack of ligament support following miscarriage, abortion, parturition. In these cases if we are true to the Osteopathic principle we must look after the primary conditions.

All cases of uterine displacement are associated with severe pain in the lumbo sacral region or the sacro coccygeal region, resulting at times in inability to walk, or at least to keep the back straight. This indicates that the primary trouble in connection with the spine is either traumatic or overstrain in connection with muscles and ligaments, especially from first lumbar to coccyx. In some cases the muscles are intensely contracted, in others greatly relaxed. In the former case there is pressure on the nerve supply, cutting off the tonic and trophic impulses to the uterus. This also explains the weakening of the abdominal muscles.

The Specific Treatment is--

a To restore tonicity by building up the nutrition and strengthening the nerve function. By nutrition I mean not diet so much as by treatment.

B Correcting the lesions that obstruct the nerve functions. Look for lesions in the form of luxations in the lumbar region or of the innominate bones. To correct these place the patient on the face with the limbs straight out and the arms hanging over the sides of the table. In this position, if normal, the spinous processes of the lumbar vertebrae should be equally distant from one another. When abnormal we find irregularities or what are called breaks in the spine correct these by articulation. Another condition that is common is a right lateral displacement of the vertebrae-- correct this with the patient on the face by relaxing the muscles thoroughly, then place the thumb or finger on the right side of the midplaced vertebrae; have some one assisting to lift both limbs from the table and carry them over to the left side and in this position give strong extension to the limbs, then elevate them in extension as much as possible and in elevation carry the limbs back to the straight position with the trunk of the body while strong pressure is applied on the right side of the displaced vertebrae. In left lateral displacement reverse the treatment.

In some cases there is a posterior displacement; in this case place the patient on the left side, flex the limbs on the abdomen and with the fingers over the spinous processes give steady pressure forward, the flexed limbs resting against the operators body. while keeping up this steady pressure extend the limbs from the position of flexion and push them backward beyond the normal, keeping up the pressure on the vertebrae at the same time. Treatment may also be given in this condition with the patient on the face- apply strong pressure with one hand over the posterior vertebrae, with the other hand catch the limb or both limbs if possible just above the knees, elevate the limbs as much as possible and give a free lateral rotatory movement of the limbs while applying pressure over the vertebrae. In displacements of the coccyx give a similar treatment, applying pressure over the sacro coccygeal junction. In this case make sure the two limbs are as tightly banded together as possible. I generally take my whole arm twisted around to keep the limbs well together. In severe anterior displacements of the coccyx give this treatment using

one limb at a time and insert the fingers laterally at the sides of the coccyx opposite to the limb you are elevating, pulling up on the coccyx diagonally. The old method of inserting the fingers into the rectum I do not find as serviceable as this method.

In anterior displacements of the lumbar vertebrae, lay the patient on the face, pulling the patient over as close to the edge of the table as possible on the same side on which you are standing; with the fingers on one hand catch the spinous processes and if the muscles are freely relaxed, the transverse processes on the side opposite to that on which you are standing, then pull diagonally over toward the side on which you are standing and at the same time with the other hand take the limb lying out on the edge of the table by your side and allow it to drop down, pushing it down as far as possible and then rotating it outward and upward onto the level of the table, then pull the patient to the other side and give similar treatment on that side.

c. Remove any irritating cause, such as constipation, hemorrhoids, neurasthenia, etc., by the appropriate treatment.

d. Give strong stimulatory treatment in the vaso motor area every second day.

e. Give the patient general treatments at least once a week; with the patient on the side or face manipulate the muscles from the sixth dorsal down through the lumbar and sacral regions, moving the muscles and soft tissues outward and upward and in the sacral region manipulate thoroughly over the sacral foramina; then with the patient on the back flex the limbs and hold them in flexion for a few minutes, follow this by rotation from side to side, keeping up the extension and then extend quickly keeping up the extension and then extend quickly with a slight jerking movement. This stimulates the nerve and blood supply.

f. In case of adhesions, the adhesions are diagnosed by the fixity of the uterus in its mal position, or by resistance to pressure, direction the uterus toward its normal position or resistance to a position assumed by the patient to replace the organ, for example, in one case a patient took the knee chest position and became sick, here was an adhesion. Adhesions are always associated with partial prolapse and some other forms of misplacement. To treat the adhesion apply strong extension to the spine and limbs; give careful stretching to the lumbo sacral muscles and ligaments, for example, by placing the patient on the face and elevating the limbs backward as far as possible. This stimulates

and increases the circulation, causing absorption of the adhesion substance; along with this stimulate the tonic condition of the ligaments by relaxing the muscles and ligaments, stimulating the abdominal blood supply and toning up the perineum. Give stimulatory treatment to the round ligaments as they cross the pubis. Give strong abdominal treatment to the iliac circulation; stimulate the pudic nerve as it crosses the spine of the ischium — this increases the pudic nerve force and also the pudic blood circulation. This treatment is sufficient to break up any adhesions without any internal treatment

g. In cases of traumatic displacement or when the uterus remains displaced after the other conditions have been corrected, local treatment may be given to replace the uterus. This applies to the one case where the uterus has been traumatically misplaced without any other organ being involved and even then it is not always necessary.

In giving local treatment place the patient either on the back or on the left side, then insert the operating finger so as to support the uterus and while holding the uterus in position have the patient gently rise from the table to the erect posture on the feet, then have the patient bend forward as to allow the viscera to move away from the pelvis, press the organ into position and then have the patient gradually straighten up to erect posture and then pull the patient's body backward so as to allow the viscera to gradually drop down into the normal position around the uterus. Another position is the knee chest position — kneeling on the table with the chest inclined downward until it touches the table; this position allows gravity to pull the viscera away from the pelvis and in many cases, if there is no adhesion, will allow the replacement without local treatment. If this is not sufficient, gavinal dilatation allows the atmospheric pressure to aid in driving the uterus into its normal position; then gently move the patient from the knee-chest to the side position. Manipulate the abdomen while the patient lies on the side, deeply but gently, then have the patient move from the table to the erect posture, very slowly, so as to allow intestines to resume their normal positions around the uterus.

Menstrual Disorders.

HEMORRHAGE

Disturbances of menstruation represent as a general rule circulatory disturbances. either

general or local. The treatment of these represents correction of the circulation.

(a) Amenorrhœa.

This represents the partial or entire absence of menstruation or a condition in which compensation for the absence of menstruation in what is called "Vicarious Menstruation". Amenorrhœa is found in two forms-- where menstruation has never been established, and where it has been established but suppression has taken place. In the first case there is liable to be some structural change in the organisms in the nature of deficient or malformation. The second condition is found in connection with any of the blood diseases or secondary to some diseases involving waste or exhaustion to the system. In the case where vicarious menstruation is found the blood is taken by some other organ or part of the body and is thus kept away from the other organs of the body, (the pelvic organs). One frequent form of menstrual suppression, is that found in connection with tuberculosis. In this case the system being in an abnormal condition needs blood to such an extent that the uterine organs do not receive their normal supply. In this case not only is there menstrual suppression but in some cases even atrophy, or, where tuberculosis exists at puberty the embryonic or undeveloped condition of the organ is not an uncommon thing. I had a case of a patient twenty six years of age where the embryonic condition was very marked, the patient having a tubercular history.

The blood supply of the uterus and liver are parallel to one another, the parallelism consists in this principally, that there is a blood supply for the nutrition of the uterus and another for the uterine secretion. Menstruation is to be regarded as the excretory side of the latter function, viz., the elimination of the excess blood in the internal secreting function. That means that amenorrhœa is a disturbance of both secretion and excretion.

Another common form of amenorrhœa is associated with anemia, accompanied by dyspnoea and palpitation of ~~xxxx~~ appetite, headache, constipation glandular enlargement, indicating the excess of lymph and the deficiency of blood; sometimes hysterical conditions and oedematous symptoms

(b) Insufficient Menstruation

This is classified by some as amenorrhœa. It is not, however, a distinctive amenorrhœa, but represents a reflex resultant interference with the secretory and excretory functions of the pelvic organs

secondary to some regional or constitutional condition, preventing the uterus discharging its normal function. In this case there is an incoordination between the pelvic and the general circulations of the blood. That is a condition you frequently find in a case of suspended menstruation for several months; it is not amenorrhea but due to something preventing the discharge of the uterine function. I think it clears the function to look upon menstruation as an excretory function and bring it into line with other conditions of disease.

TREATMENT for Amenorrhea and insufficient menstruation.

The main object is the equalization of the circulation of the blood, paying particular attention to the organ that is wasting blood or that is draining blood away from the pelvic organs. Secondary to this give local treatment to the vaso-motors to the uterus, tenth eleventh and twelfth dorsals; stimulation of the great vaso-motor area in the cervical region; the treatment of the lymphatic and sweat areas in the lower cervical and upper dorsal and lower dorsal and upper lumbar, particularly where there is cold sweat on the hands or feet. Among the specific points are -

1. Correcting of lesions interfering with the circulation, especially in the region of the vaso-motors for the ovaries and uterus- I mention the ovaries here, in saying that menstrual disturbances is a uterine condition, because the uterine function is stimulated by the ovaries-- fifth to twelfth dorsals, lumbar and sacral region. Also look for conditions of obstructive pressure in the abdominal organs, e.g. pressure on both the ovarian artery by the colon, as in case of chronic constipation. In all cases treat very thoroughly the ovarian artery, beginning about the umbilical level and following the artery toward the pelvis.

2. Give strong stimulatory treatment from the ninth dorsal down through the lumbar and sacral regions. This should consist of thorough stimulation and kneading along both sides of the spine and articulation, particularly strong stimulation from the eleventh dorsal to the second lumbar to reach the uterus and cervix uteri through the inferior mesenteric ganglion, followed by direct treatment of the inferior mesenteric ganglion treating through the abdomen right over the inferior mesenteric artery below and external to the umbilicus; follow this by strong inhibition of the sacral nerves to relax the uterus, os uteri,

etc. of the pelvic structures.

3. Give treatment along the common and internal iliac circulation to stimulate the blood flow. Begin about two inches below the umbilicus and treat diagonally across to where the femoral artery passes out of the pelvis below Poupert's ligament.

4. Inhibition of the pudic nerve as it passes or crosses the spine of the ischium. To locate this nerve have the patient on the sd de stand in front of the patient, bend patient's limb back or upwards to relax all soft tissue structures, then apply pressure on a point about the middle or between the middle and lower third of a line from the posterior superior spine of the ilium to the external border of the tuberischii.

5. Manipulate the ovarian circulation by deep kneading, beginning at the level of the umbilicus and one inch lateral to it, moving downward to the pelvis so as to reach the pelvis about one and one-half inch on the inner side of the anterior superior spine of the ilium.

6. Treat the hypogastric plexus by pressure deep, about two inches beneath the umbilicus where the plexus lies between the common iliac arteries. just below the aortic bifurcation: also treat the pelvic plexus slightly lower down and more external where the plexus es lie on either side of the rectum.

7. If the perineum is rigid, give treatment to relax it --- grasp both tuberischia from beneath with one hand, with the other hand press down the soft tissues in front of the pubic crest, at the same time with the first hand pulling on the tuberischii so as to approximate them towrd each pther, which is a case of relaxation of the soft tissues.

8. In vicarious menstruation(a) attempt to re-establish the menstrual function; (b) treat for localized condition as a hemorrhage, meaning, for example, if it shows as an epistaxis, treat that as a hemorrhage.

9. General constitutional treatment.

(c) Dysmenorrhea.

Here is a condition of difficult or painful menstruation. There are a number of types -- (I) Neuralgic Type. This is found associated with other types of neuralgia, such as of the face and of the stomach particularly. It is found principally in those who are closely confined as in stores offices, factories, etc. It is due primarily to anemia, secondarily to starvation of the nervous system or of the particular nerves to the pelvic organs. The neuralgic pain is sometimes

limited to the uterus, sometimes extends to both uterus and ovaries: the pain is shooting and cutting in its nature, radiating up from the uterus to the ovaries, sometimes to the spine and in some cases it may settle down to epileptic type.

(2) Obstructive type. This is frequently associated with some uterine flexion or version, causing constriction of the cervix. It is also found in polypoid growths, producing vaginal stricture. The pain in this case is cramping in its nature with a tendency to hemorrhage.

(3) Congestive type. This is due to exposure to cold or damp or to some obstruction of the circulation. In this case there is inflammation sometimes associated with peritonitis, ovaritis or some form of misplacement. The pain in this case consists of the fullness, weight and local temperature, the pain being located in the back of the pelvis: at the menstrual period there is rapid pulse, headache, flushing of the face or surface of the body, the symptoms being relieved after the menstrual condition is established.

(4) The membranous type. This is a sequel to endometritis, the membranous formation taking place about like diaphragmatic membrane, formation. The pain is a crampy, colicky pain relieved by the rupture and expulsion of the membrane.

(5) Ovarian Type. This is secondary to diseases involving the ovaries. The pain is a congestive and timorous pain and there is intense pain in the ovaries themselves, great tenderness in the ovarian region and great sensitiveness on the slightest exertion.

TREATMENT OF THE ABOVE CONDITIONS

The aim of the treatment in all of these cases is to free and equalize the circulation in order to establish a normal blood circulation through the pelvic organs.

SPECIFIC TREATMENTS

1. Strong inhibition in the area of the sensory nerves, beginning in the middle of the dorsal and continuing deep inhibition down through the lumbar and sacral regions.

2. Patient on the face, begin at the ninth dorsaland pull the muscles outward then upward from the spinous processes, This relaxes the soft tissues and relieves irritation to the nerves. At any points where there is pain or tenderness, give strong inhibition.

3. Relax the muscles thoroughly in the lumbar and sacral regions, then apply strong stimulation over the sacral foramina.

4. Deep inhibitory pressure over the solar plexus followed by strong stimulation the object is to stir up the splanchnic system so as to stimulate the circulation to the pelvic organs

5. Give treatment to stimulate the menstrual flow, particularly manipulation of the blood vessels through the abdomen; follow this by strong stimulation by articulation of the spine.

6. With the patient on the back flex the limbs on the abdomen, one at a time, holding tightly in flexion for a few minutes, then gently rotate them from side to side.

7. Give inhibitory treatment over the symphysis ~~pubis~~ pubis and uterus and follow this by tapping treatment over the symphysis.

8. Give strong extension to the spine, particularly the lower half of the spine so as to coordinate the nerve impulses and concentrate them in relation to the pelvic organs. In giving that extension to the lower half of the spine, the main point is to give the pulling movement to the feet and not otthe head.

9. Give treatment to vaso-motor areas in the neck and the local vaso-motor area for pelvic organs ninth dorsal to second lumbar-- Examine very carefully for irregularities in the spine in this area and correct them.

10. The common cause of dysmenorrhoea is a uterine displacement, causing stoppage of the flow, resulting in a congestive, obstructive condition of the circulation. In treating this condition (a) treat for the reposition of the uterus (look ~~to~~ previous treatment): (b) attempt ~~to~~ counteract the congestion by equalizing the circulation and establishing an abdominal congestion apply strong inhibition in solar plexus; (c) left the congested uterus away from the blood vessels and the tense utero-sacral ligaments as recommended in the field of obstetrics.

11. In the ovarian type apply vibration and give deep inhibitory pressure in the abdominal ovarian region; place the patient on the face applying one hand over the sacrum and give strong pressure while pulling the limb or limbs of the patient backward strongly. This stretches the muscles and causes relaxation in the ovarian region and also inhibits the sacral nerves.

12. Give a general spinal treatment to quiet the nervous system. When there is a chill or

or chilly sensation give thorough general stimulation to the heart and lungs from the spinal centers and if necessary have the patient take a hot bath.

MENORRHAGIA.

Here there is the excessive or protracted menstrual flow, with or without symptoms. In some cases there is pain but in the majority of cases it is excessive menstruation without pain. The lesions found are particularly lesions of the innominates; rigidity or relaxation at the symphysis and the sacral articulations and sometimes lumbar and lower dorsal regions.

TREATMENT;

1. Strong inhibition over the solar plexus
2. Patient on the face or left side; relax all the muscles from the fifth dorsal down through the lumbar and sacral regions, giving strong stimulation upward from the sacral region to the fifth dorsal. Treat both sides but do not turn the patient on the right side.
3. Strong inhibitory pressure over the uterus and symphysis pubis.
4. Correct lesions that may be found.
5. Give strong pressure over the abdomen, pulling backward on the innominates. The patient may be either sitting or lying down; if sitting put the knee on the sacrum and pull backward on the innominates at the superior spines of the ilia.
6. Give a quick sudden jerking movement over the symphysis pubis and apply strong stimulation over the round ligaments where they pass over the pubic arch, located about one inch on either side of the median line of the symphysis pubis.
7. Give strong stimulation to the sacral nerves to cause contraction of the uterus, cervix and os. Do not give this stimulation in the lumbar and dorsal regions.
8. Give strong inhibitory pressure over the common and internal iliac circulations.
9. Place the patient on the face with the pelvis elevated to keep the patient in that position periodically and while in this position give strong inhibition between the first and second lumbar and between the third and fourth lumbar and fourth and fifth lumbar, pushing the fingers well inward and upward.
10. Strong inhibition, with the patient in the same position, upward along the spine from the sacrum to the fifth dorsal; continue this treatment periodically.

METORRHAGIA.

Here is uterine hemorrhage not associated with in

any way with menstruation or the menstrual period. It is generally caused by some interference with or obstruction to the general circulation. Sometimes secondary to diseases involving the heart or lungs and degenerative changes in the arterial walls of the uterus circulation. It is also frequently found secondary to abortion or miscarriage—in this case give treatment similar to that in hemorrhage. The main point is to determine the blood to the upper part of the body, hence in treatment—

1. Give the principal attention to the splanchnics from the twelfth up to the sixth dorsal, giving strong stimulation.

2. Begin at the third lumbar and treat upward towards the neck, paying particular attention to the vaso motor area.

3. Apply strong inhibition in the sacral region to inhibit the dilator fibres, thus causing constriction of the blood vessels in that area. Use the same treatment in a case of threatened miscarriage.

OVARIAN CONGESTION AND HEMORRHAGE.

This is due to obstructed circulation in the ovarian field. In this case the ovaries are enlarged, venously congested and very tender.

TREATMENT:

1. Treat to equalize the general circulation.

2. Inhibit strongly over the solar plexus.

3. Inhibit strongly over the ovaries themselves and upward over the ovarian blood supply.

4. Give strong inhibition in the lower dorsal area, ninth to twelfth, vaso motors to ovaries.

5. Manipulate the abdomen thoroughly and give deep ovarian inhibition continued along the ovarian vein.

6. Strong inhibition to the spinal sensory nerves to the ovaries, especially at the tenth and eleventh dorsals, over the sacrum and the hypogastric plexus.

7. General treatment to equalize the general circulation—deep and superficial.

PUDENDAL HEMORRHAGE.

Sometimes called Pudental Hematocele.

Here we have a blood effusion into the vulvo vaginal tissues, the blood passing into the labial and areolar vaginal tissues. It is generally the result of traumatism and strong muscular effort when the perineal tissues are weak, e.g., following parturition. Among the symptoms we find local throbbing, intense localized pain, first a soft and then a hard swelling. In some cases there is interference with micturition due to pressure and congestive of the urethral structures.

TREATMENT:

1. Give treatment to equalize circulation in the pelvic and general blood fields.
2. Give inhibitory pressure in the lumbo sacral region to deal with the direct blood supply to the local parts.
3. Flex the limbs on the abdomen and at the same time apply pressure over the perineum so as to cause relaxation of the perineal and vulvo vaginal tissues; after flexion of the limbs give rotation outward.
4. Give general circulatory treatment.

PELVIC HEMORRHAGE or PELVIC HEMATOCELE.

Here there is an effusive hemorrhage into the cavity of the pelvic peritoneum, forming a sac. This is found most commonly secondary to cases of abortion; sometimes to rupture of the uterine foetal sac in a case of what is called utbal pregnancy. It is also found in some cases where the perineal structures become greatly relaxed; there is a sudden pain, localized first in the uterus, then disseminated downward into the pelvis. This pain is accompanied by symptoms of shock, such as pallor, rapid, feeble pulse, sub normal temperature, cold perspiration, gastric symptoms, and sometimes by fainting.

TREATMENT:

Treat the patient for shock or collapse principally in relation to the heart and general circulation.

2. Control the localized condition of pain by inhibition around the perineal region and in the supra pelvic region. In some cases the application of hot fomentation is servicable in such a case.

3. Stimulation the blood circulation upward in the body, for example, elevate the pelvis by putting the patient on an incline plane and treat upward along the spine.

4. Give inhibitory treatment to the sympathetic system, also inhibition to the tenth cranial nerve and strong inhibition at the third and fourth dorsals.

5. In case the hemorrhage continues apply dry heat abdominally.

LEUCORRHEA.

Here is what is commonly called a uterine catarrh to a utero vaginal catarrh. In reality it represents abnormal secretion and excretion, associated with or secondary to the interference with the circulation. The most common cause physiologically is an obstruction to the vaginal circulation caused by — (a) direct lesions in the

lower lumbar and sacral regions; (b) sometimes localized obstruction caused by some type of prolapse or some type of version or flexion following partial prolapse. In this case look for lesion of the lower ribs, lower dorsal and lumbar vertebrae, particularly ninth to twelfth dorsals, and luxations of the innominate. The primary vaginal circulatory disturbance is connected with disturbed menstruation. Sometimes it indicates the uterine inversion causing the dilation of the blood vessels in the posterior part of the uterus and vagina. It is also found in a case of growths, such as fibroid tumors of the uterus, polypoid growth; sometimes it is associated with rectal prolapse or enteroptosis and in some cases is secondary to endometritis. The leucorrhoeal discharge is whitish or yellowish depending on the extent to which the condition has developed in connection with the disturbed circulation. During menstruation normally the uterus is enlarged internally and increased vascularity, the mucous membrane becomes swollen and dark in color; at the menstrual period the increased mucous membrane is disintegrated, the disintegrated membrane and blood being thrown out as a secretion, the bases of the glands embedded in the muscle tissue being left behind to form the basis for a new mucous membrane formation. In the leucorrhoeal condition there is a chronic enlargement of the mucous membrane and a continual elimination process in connection with the leucorrhoeal secretions and excretion. Some distinguish between acute and chronic leucorrhoea, all leucorrhoea, however, is in reality chronic the acute form being a periodic acute manifestation of the chronic condition; like nasal catarrh if chronic, there is a day or so of acute condition. The chronic leucorrhoea is a constitutional condition and can be cured only by building up the system. The great mistake in treatment is the attempt to cure the condition locally.

Leucorrhoea may be caused by overwork, especially continual standing on the feet without locomotion, that tends to determine the blood down to the feet, or standing long on the feet, particularly where the feet swell. In younger persons there is a greater resistance and blood flow is taken away from the pelvic organs and an incomplete circulation or static condition. It is also caused sometimes by too stimulating diet,

especially an excess of acid and sugar fruits and in some cases by the excessive use of milk. In some cases it is secondary to gonorrhoea.

Treatment;—

Look for lesions in the lower dorsal and lumbar; anterior innominate lesions; posterior or lateral lesions of the fifth lumbar; irregularities in the whole spinal column, particularly associated with rigid muscular and ligamentous conditions. The object of the treatment is two fold— (a) to correct the coordination of the circulation between the pelvis and the rest of the body; (b) to establish thorough drainage. Note that the drainage is to take place through the lymphatic system, rather than a venous drainage.

1. Palliative Treatment. Stimulate thoroughly the lumbar and sacral regions and the deep abdominal treatment to effect the pelvic circulation. also raise the abdominal and pelvic diaphragm and stretch the diaphragm. That will correct the circulation and act as a palliation.

2. Give treatment similar to that of amenorrhoea, in addition to which give patient thorough constitutional treatment— (a) place the patient on the face and relax all the muscles downward along the spine, then articulate upward along the spine; follow this by a slow steady pressure on both sides of the spinous processes along the entire length of the spine downward, then give strong sacral pressure while the limbs are lifted up backward as far as possible. Give this last treatment persistently, keeping it up until the condition is well controlled. It relaxes all pelvic and abdominal tissues and contracts the circulation all over the pelvis and lower trunk.

3. Thorough treatment in the lymphatic areas particularly the lymph area for the lower part of the body.

4. Give good deep kneading treatment to the abdomen from the lower part of the abdomen upward.

5. Diet and Hygiene. Have the patient clothed so there is no weight or pressure from the clothing on the pelvis. Diet the patient on simple and easily digested food, eliminating all or about all flesh foods. Have the patient in the open air as much as possible and avoid standing still for any length of time. In the morning have the patient use a sponge bath, followed by thorough rubbing to stir up the superficial circulation. Patient should also use an injection of warm water— not hot water— with a few drops of eucalyptus oil to get antiseptic, clear away all the secretions and cleanse the mucous membrane, using about thirty drops of

oil in a pint of water. Give the patient avoid sweats of all kinds and an excess of acid fruits. In taking fresh fruits, such as strawberries, it is best to eat them with whole wheat bread rather than alone, as the bread absorbs the acid. This is best in all cases where acid fruits do not agree chewing the bread and fruit together.

6. Keep the bowels open by persistent treatment for that purpose and if a dyspeptic condition develops have patient fast periodically, for example one meal a day or one day per week.

GONORRHEA.

Here in so far as it bears on the subject we have a poisonous condition of the normal secretion together with toxic excretion. This means that the blood circulation is so poisoned, with the result that an abnormal secretion and excretion takes place, both secretion and excretion being poisoned. Gonorrhoea is an infective condition, the poisoning taking place either by the presence of the gonococci or of their secretion or excretion. The danger in gonorrhoea lies in the fact that it is not local, that is, it does not establish itself in the vaginal or utero vaginal field but travels to all of the appendages of the organs, for example, peritonitis, salpingitis, gonorrhoeal arthritis, are probably the most common secondary or after effects. To prevent the development of the gonorrhoeal complications the treatment should take place at once. The effects of gonorrhoea are greater than those of syphilis because of the distinctive action of the gonorrhoeal infection upon all epithelial, peritoneal, mucous and synovial membranes, for example, sterility following gonorrhoeal infection is due to the destruction of the epithelial membrane in the ovaries, fallopian tubes and uterus; the same thing is true of abortion in cases of gonorrhoeal infection. Endometritis is an irritation or irritant inflammation caused by the intoxication of the endometrium by the gonorrhoeal toxin. The common method of treating this condition is curetting. When the infection becomes complete the surgeon removes the entire organ. Both of these methods of treatment are wrong, because if the fallopian tubes, ovaries and uterus are infected to such an extent that they need removal, it would be just as logical that the spinal cord and brain should need removal also. Curetting, however, antiseptic the condition may be, converts a local gonorrhoeal infection into a diffuse pelvic infection, because it drives the toxin to the deeper structures. The meaning of

this is that gonorrhoea, like leucorrhoea, is a constitutional condition and is to be treated as such. If treated properly neither chronic invalidism nor mutilation are necessary. The general treatment is-

1. To control the circulation, not only in its movement, but in the quality of the blood and the elimination of the toxins from the blood meaning the stirring up of the detoxinating centers to purify the blood.

2. Special treatment to keep under control the pelvic and localized inflammation, such as will be outlined under the treatment of inflammatory conditions.

3. Constitutional treatment especially directed to the perfect assimilation and elimination in the tissues, dietetic as well as Osteopathic.

4. The kidneys, liver and bowels must be kept continuously active in order to rid the system of these poisons through the normal excretory channels. In cases of gonorrhoea it is advisable to keep up a continuous diarrhetic condition by treatment, use of fruit, etc., to keep up the elimination.

INFLAMMATORY CONDITIONS.

The different inflammatory conditions are caused by lesions; irritating toxins found circulating in the blood; traumatic conditions.

ACUTE METRITIS- the most common form.

Here we have an acute inflammation of the uterine substance. It is always associated with either peritonitis or endometritis. The lesions are found in the lower dorsal, sacral and lumbar regions, in the innominate and sometimes in the vaginal region. The symptoms are intense pain localized in the uterus, radiating upward and downward from the uterus and sometimes in all directions through the pelvic field. In addition there is an increase of temperature, increase of pulse rate, There is enlargement of the uterus with great tenderness, aggravated or superficial pressure. Severe pain is also found over the hypogastric plexus and the patient sometimes complains of uterine shock, causing dizziness, faintness or the swinging sensation. What I mean by uterine shock is that it starts in the uterus in the form of a collapse sensation reacting on the nervous system.

In chronic metritis the uterus passes into a condition of chronic inflammation, with great hyperaesthesia, the cause of this being malnutrition, that is, the nutrition seems to be suspended and there is simply an accumulation of blood in the uterine substance, causing the uterus to enlarge but giving it a soft and pulpy feeling. This

represents chronic state following the acute condition. Among the symptoms we find a sense of enlargements, of weight, sense of fullness and pressure upward, sometimes so great that there is a sense of symphysis rupture. The pain becomes chronic and instead of the uterine pain found in the acute type there is a dull aching pain passing around to the lumbo sacral region down to the limbs, into the rectum and bladder, causing extreme bladder sensitiveness and irritability. The pain is sometimes described as that of binding to or pulling the pelvic organs to the lumbar and sacral regions, the pulling being directed from the uterus to the lumbo sacral region. In this you have the differential point between this condition and lumbago; in lumbago the pain pulls forward, that is, away from the lumbar region. Some describe the chronic metritis pain as though there was entire loss of support at the symphysis. In the chronic type we find a large number of reflex conditions affecting the circulation, nervous system, and more particularly the spine and in many cases of the brain.

ENDOMETRITIS

In the acute form there is inflammation of the endometrium or lining membrane of the uterus. It is generally caused by - (1) exposure; overwork or overexertion in connection with menstruation; (2) continued menstrual disturbances; (3) suppressed menstruation. This inflammatory condition involves not only the blood circulation but so obstructs the blood circulation that there is a limpid discharge which later becomes thick and mucoid. This means an exudation with resultant secretion formation in the perverted functional activity of the mucous membrane. Associated with this is an increase in temperature; sharp, shooting and cutting pains, starting in the mucous membrane of the uterus extending through the substance of the uterus to the pelvis and later radiating to the lumbar region of the spine. The lesions found are in the lower dorsal, lumbar and sacral regions.

In the chronic type there is the continued acute condition, or more commonly it is found as a result of the retention of the placenta following parturition, miscarriage or abortion. Here the endometrium becomes chronically enlarged and there is a continual mucoid secretion discharged from the mucous membrane. There is a constant pain in the pelvis radiating around the lumbo sacral region.

The pain in this case is like the pain found in dysmenorrhea, a dull aching pain with paroxysmal conditions.

TREATMENT OF METRITIS AND ENDOMETRITIS:

The main point is the correction of the circulatory condition, especially coordinating the pelvic and abdominal circulations in connection with the iliac blood vessels, solar, hypogastric and pelvic plexuses.

SPECIFIC TREATMENT:

1. Treat the patient similarly to a case of leucorrhœa. Patient on the face, relax all the muscles down along the spine, pulling out and up, applying deep pressure along the spine, upward.
2. Articulate from the dorsal down through the lumbar and sacral regions.
3. Give a strong treatment from the lumbar down; it is best to have the patient on the face and the pelvis elevated, and if the patient is not too heavy lift both limbs and apply pressure on the spinous processes away from yourself while giving elevation and rotary movement to the limbs, then put the fingers on the opposite side and pull the vertebrae toward you.
4. Give strong vibratory treatment over the symphysis pubis, followed by strong tapping treatment in the same area, same as in suppressed menstruation.
5. Give strong extension to the spine, particularly the lower half of the spine, pulling on the feet.
6. Vibration over the uterus, beginning lightly and gradually increasing the depth and force of the vibration, following this by deep inhibition. from the uterus upward, continuing this upward along the vaginal region on both sides.
7. Stimulate the general circulation, especially from the vaso motor side.
8. Give rotary treatment to the lower extremities, particularly external rotation.

ENDOCERVICITIS.

Here is an inflammatory condition of the membrane of the cervix. This is found either in the acute or chronic form and generally in the latter. It is associated with and generally secondary to the extension by sympathy along the mucous membrane from the uterus or vaginal walls in endometritis or vaginitis. Sometimes it is found as a direct primary condition in the uterine flexions or in cases where there is mechanical interference with the blood supply by some pressure condition. In some cases it is the direct result of lesion

in the spine, indicated by intense sensitiveness in the lower dorsal, ninth to twelfth dorsal area; there is pain in the back, sense of pain over the crest of the ilium; reflex symptoms of neurasthenia and sometimes leucorrhœal discharge.

TREATMENT

General treatment for the circulation.

2. Treat for the local pelvic circulation paying particular attention to the iliac blood vessels.

3. Articular treatment to the pelvis—
Have the patient on the back, stand at once side and catch the ilium strongly, then pull the pelvis up ward and push it away from you; give the same treatment on the other side. In this case do not give any movement to the trunk or limbs but simply treat the pelvis.

4. Give direct abdominal manipulation to the cervix, using the limbs as a lever so as to get deep relaxation and pressure in the cervical region
SALPINGITIS.

Here is an inflammatory condition of the mucous membrane of the fallopian tubes, always secondary to the sympathetic extension of inflammation to the fallopian tube mucous membrane from endometritis. The Symptoms are burning sensation more or less diffused in the fallopian tube area; sensation of dragging down toward the lower part of the pelvis; intense pain in the region of the symphysis pubis, especially when the patient is in the erect posture. Very frequently this is complicated by a dysmenorrhœic condition; sometimes by pelvis peritonitis.

OVARITIS is an inflammatory condition of the ovaries that generally accompanies, follows or is in some way associated with salpingitis. In some cases the ovaritis is primary in connection with sepsis during parturition; exposure or over exertion during menstruation. Here there is acute pain in the ovarian region, sometimes called ovarian colic from its resemblance to pain in colic, the pain radiating around the sides to the back to become centralized in the lumbar region; also painful defecation and micturition.

TREATMENT OF SALPINGITIS AND OVARITIS:

Lesions are found at the eleventh and tenth dorsals and in the sacral region; also over the hypogastric plexus.

1. Treatment to relieve congestion same as in any other form of congestion.

2. Place the patient on the face, pull the muscles outward and upward from the sacral region

upward through the lumbar and dorsal region; apply inhibitory pressure over the lumbo sacral region at the same time pulling the limbs of the patient upward and backward.

3. Give strong inhibitory treatment over the ovaries and the fallopian tubes, followed by inhibition downward toward the uterus and then give deep inhibition over the ovaries, fallopian tubes and uterus.

4. Give general circulatory treatment coordinating the circulation in the pelvic and abdominal regions.

Vaginitis.

Here we have an inflammation of the mucous membrane of the vaginal walls, either in the acute or chronic form. It is secondary to a low state of vitality; sometimes caused by lesions in the ninth to twelfth dorsal regions involving the blood supply or nerve supply to the mucous membrane; sometimes secondary to leucorrhoeal or gonorrhoeal discharges, weakening the condition of the membrane.

Symptoms; Pelvic pain; burning heat in the vaginal walls; itching sensation and irritation of the bladder and urethral tract. In some cases it is an after complication of leucorrhoeal conditions; of various types, hence all leucorrhoeal symptoms will be found.

(1) Granular type, in which the inflammatory condition results in hypertrophy of the follicles lying between the vaginal folds. This causes the proliferation of the granulation tissue.

(2) Specific type associated with syphilitic or gonorrhoeal conditions. Here there is the sensation of heat or weight and a leucorrhoeal discharge corresponding with the specific infection.

(3) Ulcerative types, found particularly in older patients whose vitality is low sometimes secondary to chronic leucorrhoeal conditions.

(4) Diphtheritic type, secondary to diphtheria, a typical membrane formation taking place.

(5) Catarrhal type, the condition being catarrhal. This type is generally limited to the mucous membrane of the vulva; secondary to non-hygienic conditions; irritating discharges, parasites; local weakening of the mucous membrane in connection with general debility.

Symptoms are a local burning pain, itching and oedematous enlargement of the mucous membrane. This condition is liable to become chronic, especially in those of low general vitality and in this case it is liable to become ulcerative, the ichorous discharge keeping up a chronic local irritation

(6) Follicular Vaginitis. This is limited to the vulva and is found in the form of an inflammation of the mucous and sebaceous glands in connection with some condition of the vaginal discharge, followed by an increase of the granular secretion and ulcerative spots around the sebaceous glands. This sometimes passes into a gangrenous condition resulting from cutting off the blood circulation or intoxication of the tissues. This is found secondary to puerperal fever, scarlet fever, measles, etc.

TREATMENT FOR ALL FORMS OF VAGINITIS:

Look for localized lesions in the region of the sacrum, in the rigid condition in this region; rigidity in relation to the round ligaments where they pass over the pubic arch, ninth to twelfth dorsal fourth and fifth sacrum and fifth lumbar being the principal points of lesion.

1. Treatment of the spinal muscles all along the spine free from the cervical region down, paying particular attention to the lower half of the dorsal and upper half of the lumbar area.

2. Strong extension to the spine, followed by relaxation of the abdomen from the inguinal regions, up, followed by rotation of the limbs and strong flexion of the limbs on the abdomen.

3. Strong pressure over the sacrum with the patient on the face, elevating the limbs backward; inhibition of the pudic nerves. Inhibition of the round ligaments by rhythmic treatment at fourth and fifth sacrum where we get vaso motor control in control in connection with the sacro median blood supply and the perineum and other structures.

4. Relaxing treatment to the perineal tissues.

5. Inhibition over the symphysis pubis.

6. General circulatory treatment.

PELVIC PERITONITIS.

Here is an inflammation of the peritoneum around the pelvic organs, secondary to ovaritis, metritis, endometritis, sometimes following parturition or abortion. In some cases it is caused by uterine misplacement and the persistence of the misplacement. In other cases it is secondary to septic infection, passing from the vaginal, uterine or fallopian tubes fields into the peritoneal field. In other cases it is secondary to traumatism, gonorrhoeal infection (passing up from the pelvic organs) and in a few cases is due to menstrual disturbances, particularly severe dysmenorrhoea. It is sometimes found in connection with diathermic conditions when there is dysmenorrhoea conditions.

Symptoms are pain and tenderness in the lower part of the abdomen, pain being diffused. The patient lies on the back with the legs drawn up on the abdomen to relieve the pain. This condition is much like appendicitis, save the latter is confined to the right side. The pulse is rapid, temperature elevated to 105 or 106 and there is general nauseating sickness, sometimes vomiting. Another symptom is abdominal tympanitis and constipation. The whole pelvic field has the sensation of discomfort, also rectal and vesical irritation.

TREATMENT:

Look for lesions in the lower dorsal and lumbar regions. The main point in treatment is to get control of the vaso motor nerve supply, particularly through the splanchnic field.

1. Through relaxation of the spine, paying particular attention to the region from the eighth dorsal down to the sacrum, moving the muscles outward and upward, inhibiting close to the spinous processes and gently articulating. In a severe case this will have to be done with the patient on the back as the skin will be too sore to put the patient on the face.

2. Light inhibition over the abdomen, from the lower abdomen pressing upward. Follow this by flexion of the limbs on the abdomen and holding the limb in flexion, the foot slightly everted and knee inverted across the abdomen.

3. Strong pressure over the sacrum and if the patient is able to lie down on the face, pulling the limbs backward; if not, pull patient close to the edge of the table, put the hand at the sacrum and allow the limb to drop down off the table.

4. The application of heat over the abdomen and pubic regions, applied as lightly as possible, without weight. In some cases it may be advisable to use something like antiphlogistine applied over the entire lower abdominal field.

PELVIS CELLULITIS.

Here is an inflammation of the areolar connective tissue in the pelvis around the peritoneum. Sometimes this is secondary to pelvic peritonitis and in some cases the cellulitis becomes suppurative.

Symptoms;- Rigor, with chills, high temperature patient lying on back with one limb drawn up and a very severe pain on that side.

TREATMENT:-

Treat this condition similarly to peritonitis, in addition to which the following--

1. use antiseptic hot vaginal injections in

an attempt to drain out the condition in that direction rather than to diffuse it. In connection with this apply heat to the abdomen --- here you can use the common poultice fomentation.

2. Keep the bowels thoroughly open, using the high color douche, in order to keep the entire colon free from irritating substances,

3. Give the patient only a slight diet, milk for example, if milk agrees with the patient: if not use some other very light diet and continue while the inflammatory condition continues.

Tumors and growths.

There are various kind of tumors, all of them associated with some obstructive or irritative condition causing such a change in the tissues that there is a field opened up for the accumulation of foreign matter, toxic or otherwise. This is true of the tumors either malignant or benign. We find lesions involving the bones, muscles, ligaments and cells of the tissues, obstructing the blood and nerve supply and especially the lymph supply. My theory is that the vast majority if not all tumors are secondary to lymphatic disturbances. There may be a history of scrofula associated with this condition and that of course involves the glandular system. In some cases there is direct irritation of the tissues. The most common lesion is a lesion cutting off lymphatic drainage, either

(a) by direct pressure on the lymphatic vessels, or (b) by irritation of the lymphatic centers in the spine; (c) By obstruction of lymph through lesions of the blood system, especially vasomotor, altering lymph pressure via blood pressure; (d) lesions affecting the sympathetic system which cause the loss of ~~its~~ lymphatic visceromotority. In the subject of causes one point I am trying to make clear is that the lesions in those cases are all lesions tending to separate the sympathetic from the cerebro-spinal nervous systems in activity; in other words, it would be impossible to cause tumors if the cerebro-spinal system could always exert its ~~its~~ restraint normally. Hence, in tumors of the heart we find clavicle, first second, third, fourth, fifth and sixth rib lesions, interscapular vertebrae, lower cervical vertebrae, sternomastoid and trapezius muscle lesions. This causes an enlargement of blood and lymph vessels and glands, hence we find pain radiating toward the axilla. the claviculo-acromium and the claviculo sternal articulations; The ~~axillary~~ clavicle and scapula are always involved and this obstructs the lymph drainage on the heart.

HYPERTROPHY OF THE CERVIX

Here is simply the increased proliferation of the cervical tissue. The symptoms are a feeling of weight, sensation of enlargement and downward protrusion.

Treat this condition similarly to dysmenorrhea, the main point being to establish circulation upward through the splanchnic field. Secondary to this.

1. Give local treatment of the ligaments per surface.

2. Treat around the crest of the ilium, first inhibitory to overcome sensitiveness, later stimulating to establish thorough circulation.

3. General circulatory treatment, always directed away from this pelvic region.

FIBROID TUMOR OF THE UTERUS

Here we have a fibroid growth in connection with the body of the uterus, consisting of fibrous and fibro-muscular substance. The diagnosis of this condition is determined by the firmness and solidity of the tumor palpated through the abdominal wall. There are also symptoms of dysmenorrhea or amenorrhea and pain on pressure pelveward through the abdominal wall. There is also aggravated constipation. Sometimes there is polypoid formation involving the mucous membrane of the uterus, the polypoid growth being attached to the uterus by a pedicle or stem; this growth may be fibrous mucous or cellular.

UTERINE CANCER.

This is generally associated with the cervix of the uterus and is always marked by (1) intense pain: (2) hemorrhage: (3) and offensive discharge.

Sarcomatous type. There is a development of modified embryonic connective tissue always involving the body of the uterus. Here the discharge is watery. The starting point is a disturbance of the tissue relations, the growth taking place in connection with the accumulation and deposit of waste material. The deposit depends upon obstruction. Some claim that the origin is always in an embryonic nidus and secondary to this, prevented trophicity, obstructed blood circulation and an interference with the elimination of waste elements. It is more common after the climacteric because of the suspension of the normal excreting process on connection with menstruation.

The lesions found in these cases are in the lower dorsal, lumbar and sometimes in the

cervical region: sometimes in the region of the mammary glands, involving the third, fourth and fifth ribs, causing obstruction of lymph circulation, disordered nutrition and lack of trophic control

TREATMENT.

In the tumorous conditions one important point to note is the incoordination of nutritive conditions, for example, in uterine tumors there is uterine engorgement and mammary atrophy and vice versa.

1. Remove the lesions, especially correcting irregularity in the spine. In all tumors we find great irregularities in the spine and great tenderness caused by the irregularities, and the various vertebrae being individually lateral to one side or other.

2. Restore normal blood circulation and use this as a means of correcting the lymphatic circulation. In one case when a tumor as large as an egg was present, general circulatory treatment for one week softened the tumor and gradually dissipated it. We find frequent cystic tumors that are diagnosed either as fibroid tumors or cancers. In this case give general circulatory treatment and especially lift the uterus and its cyst away from the blood circulation, then relax the round ligaments and give thorough articulation in the sacral ligaments and to overcome adhesions. A case was diagnosed by a physician as a fibroid tumor. I did not agree but thought it a cystic tumor; in previous treatments the case was made worse: I advised a general blood circulatory treatment three times per week and to lift the uterus away from the blood circulation spoken of in the obstetrical field. The tumor disappeared by two weeks treatments, carried away by absorption there being no discharge.

3. Relieve any direct irritation, e.g. sacro-pelvic rigidity, rigidity and overgrowth of soft tissue. Note this point particularly in any condition of tumor look to the contour of the body, for example, if the hips extend out with an accumulation of soft tissue and not bony structure, you must break down and eliminate the soft tissue and you will have eliminated the cause of the tumor.

4. Do not manipulate the tumor directly but manipulate around it, especially if rigidity bound, to make it a floating tumor. This applies to any tumor.

5. Extension of the spine, and careful treatment particularly of the cervical region.

6. Flexion and rotation of the limbs, both external and internal to stimulate circulation

7. Give strong treatment of the first lumbar, articulating and applying strong pressure on both sides of the spinous processes while lifting up the limbs backward.

8. When the tumor is beginning to break up (a) vibrate over the tumor and (b) open up the lymphatic system locally.

9. Keep the bowels open and look for one thing particularly, viz. formation, which is part of the disintegration process, representing a fermentative saccharo-mycosis. The main point is a didactic one --- cut off absolutely all carbohydrate while this is going on.

10. Diet the patient very lightly and in some cases recommend fasting once a day or one day per week. This is a necessity in dealing with tumors for the reason that there are too many floating broken down elements in the body that will be carried back into the nutrition if the patient does not fast. This does not interfere with the strength of the patient.

OVARIAN TUMOR

These may be simple engorgement or cystic fibro formations or carcinomatous. The symptoms are dull heavy pain in the iliac fossa, region accompanied by a dragging sensation and sense of fullness and throbbing in the ovaries. There is also exhaustion of the patient: nervousness: rectal disorder: ovarian prolapses. The cause is frequently congestion or displacement of the uterus.

Treatment

In addition to the points mentioned under uterine tumors----

1. Thorough manipulation of the soft tissues in the ovarian region with the patient on the back and the limbs semi flexed.

2. Slight vibration over the ovaries with external and internal rotation of the limbs and deep manipulation of the iliac circulation.

3. With the patient on the face apply pressure over the sacrum, pulling the limb upwards so as to stretch the muscles in the ovarian region.

4. Attend to the uterine displacement.

5. In cystic conditions open up the lymphatic system thoroughly and vibrate over the cyst itself.

VULVO/VAGINAL CYST.
Here we have a cystic condition of the vaginal glands caused by some inflammatory condition,

disturbances of the circulation to the glands or an obstructive closure of the gland itself direct,
Treatment.

Manipulate thoroughly the soft tissue in the entire pelvic region, especially around the perineum,

2. Open up the circulation through the vaso-motor field.

3. In case of abscess development when there is local tenderness and irritation, manipulate the muscles to produce relaxation in the lumbar region, and follow this by articulation in the lumbar region.

4. Give strong inhibitory pressure in the sacral region, lifting the limbs upward.

5. In some cases it may be necessary to give internal local treatment around the gland and over the abscess. This treatment will be similar to that given in connection with any abscess.

6 Keep the pelvic circulation perfectly free and keep the patient so as to prevent constipation

URTHERAL CARBUNCLE

This also belongs to the field of secondary conditions. Here is a small rounded growth at the mouth of the urethra, associated with pain in walking, hemorrhage, frequent micturition and pelvic or vaginal disturbances.

Treatment.

1. Treat thoroughly the lumbar and sacral regions so as to free the circulation in the pelvis.

2. Manipulate around the growth itself the same as in the treatment of a regular carbuncle.

MISCELLANEOUS CONDITIONS.

LACERATIONS AND OBSTRUCTIONS OF THE CERVIX.

Laceration is the result of abnormal tension or traumatism in connection with parturition or abortion. A simple laceration does not require stitching. Surgical stitching always leaves behind cicatricial tissue formations and this frequently the cause of reflex irritations. The treatment of a simple laceration consists of

1. Stopping the hemorrhage, using the regular means. Before mentioned.

2. Antiseptic douching.

3 Stimulating the circulation upward in the body.

STENOSIS OF THE CERVIX.

This is a condition found usually congenitally. In some cases it is the result of inflammatory processes, causing either the proliferation of

new tissue with a resultant hypertrophy closing up the cervical canal, or, it may be caused by excessive constriction of the tissue in the cervix.

In this case treat generally as in amenorrhea; also treat as in a case of cellulitis or other inflammatory cervical conditions. Treat thoroughly in the sacral region until relaxation is secured and then inhibit strongly over the sacrum and over the round ligaments to relax and keep relaxed the os of the cervix.

UTERINE ATROPHY Here is a condition

1. Representing an embryonic condition of the uterine development, or-
2. The wasting of the uterus taking place prematurely as the result of some ovarian, fallopian tube or uterine disease.

Treatment:

Remove the irritative or obstructive cause, and stimulate thoroughly the circulation to the pelvis as a whole and particularly the uterus. This will mean particularly the treatment of the lumbar and sacral regions.

SUPERFICIAL IRRITATIVE CONDITIONS OF THE VULVA.

Vulvar Erythema.

Here we have the superficial inflammatory condition caused by some irritation of the nerve supply or the excoriating action of discharges. There is hyperaesthesia of the mucous membrane.

Pruritis Vulva.

Here is an irritation of the vulvar surface marked by intense itching, representing an irritation of the vulvar nerves, secondary to the action of discharges, parasites, eruptions, etc.

VULVAR Eczema.

This is a localized erythematous condition caused by the irritation of discharges from the cervix or uterus. In patients who have eczema or the eczematous constitution there is a localized redness with oedematous and vesicular formation the fluid thrown out on the mucous surface being ichorous and causing a burning, scalding pain.

VULVAR ERYSIPELAS.

This applies in connection with erysipelas in some other portion of the body, or from the careless use of such a substance as arnica. I mean the use of the tincture of arnica on an open surface.

It should never be used on an open wound and it should be very carefully used on a bruise where it is very readily absorbed. If used on an open wound it is liable to set up a mild erysipelas. Calendula either the tincture or ointment is better if necessary to use anything.

Treatment.

1. Treat the cause. If from arnica it must be dealt with as a poison and the system relieved of it.

2. Stimulate the circulation to and fro the local area. This is done by general treatment in the lumbar-sacral regions, treatment of the iliac circulation and good flexion and rotation of the limbs both external and internal.

3. Keep the part dry and if necessary use some dusting powder like starch. This is really to absorb any fluid that is exuded
VAGINISMUS.

Here is a hyperaesthesia, hypersensitive- and spasmodic condition sometimes amounting to tetanus of the sphincter muscles of the vagina. This is sometimes caused by nervous and neuritic conditions: sometimes a reaction from a perineal condition of over relaxation

Treatment; Remember that the condition is of the nature of tetanus, hence.

1. Inhibit over the round ligaments.

2. Inhibition in the sacral regions particularly at the fourth sacrum.

3. Inhibit the pudic nerves as they cross the ischial spine.

4. Treat the hypogastric and pelvic plexuses first by deep inhibition followed by rhythmic treatment.

5. A general circulatory treatment upward from the sacral region

6. Relax the muscles thoroughly in the lower part of the spine, in the abdominal region and perineal area

7. Do not give any local treatment e.g. do not attempt to dilate by any instrumental means. This is the same point you would apply in a case of rectal tenesmus. Do not apply a dilator as this sometimes causes an undue dilation of the rectum. Rectal tenesmus is a form of tetanus and it does no good to force dilation where there is tetanic condition.

Fistula. This represents the establishment of communication between the vagina and the rectum, or vagina and bladder. We find it (1) as a result of abscesses: (2) sometimes due to a laceration or

rupture in labor cases. In dealing with fistula---

1. Use antiseptic means of drainage and for cleansing. Keep the fistula packed with gauze packing carefully to the bottom of the fistula.

2. At the same time establish thoroughly the circulation and venous and lymphatic drainage using all means available to stir up both the venous and arterial blood. Keep the patient off her feet if possible and use a light diet: dry diet is advisable. Such cases are easily healed.

In fistula following psoas abscess keep the fistula packed with gauze to prevent healing at the surface. That the healing may begin at the top make sure the gauze is antiseptic and wash the part with an antiseptic solution.

COCCYGOXYNTA is an irritation condition of the coccyx associated with the loss of tone and lack of nerve function. It involves the muscles and nerves in the coccygeal region. It is frequently found as a neuralgic type following parturition. In some cases it represents an infection: in other traumatic associated with coccygeal dislocation or displacement. When the condition persists there are reflex disturbances in the spine and pelvic organs and sometimes in the heart, like any other type of neuralgia.

Treatment.

1. Correct lesions in coccyx, if present

2. Relax and stimulate the muscles of the coccygeal region.

3. Give thorough spinal treatment including extension and then elevate the limbs while applying pressure over the sacro-coccygeal region.

VAGINAL AND URETHRAL PROPLAPSUS

Urethral prolapsus represents the relaxation and dropping down of the mucous membrane around the meatus. In some cases it is due to trauma; in other cases caused by toxic absorption in the mucous membrane during elimination of the urine.

Vaginal prolapsus represents excessive relaxation of the vaginal walls and a dropping down toward the vulva. The cause is to be traced to anything that produces relaxation, such as obstruction to the blood circulation, atrophy of the walls and other pelvic diseases.

Treatment.

1. Give treatment to equalize the circulation

2. Treat in the lumbo-sacral region, looking for lesions here and around the perineum to give tone to the muscles.

3. In vaginal prolapse treat as in case of uterine displacement.

4. Stimulate in the sacral region, particularly at the fourth sacral to cause contraction of the vaginal walls.

5. Stimulate over the round ligaments.

6. Give rhythmic treatment upward from the sacrum to get vaso-motor control of the blood supply.

The Climacteric.

During the establishment of what is called the menopause we find, (1) functional disturbances of the pelvic organs, such as hemorrhages, interruption of or suspended menses, etc. (2) Functional disturbances of the nervous system. These are caused by the reaction from the change in the menstrual function, primarily on the general blood system circulation and secondarily on the nervous system. Hence we find such symptoms as headache vertigo, hot flashes over the body, neuralgic pains, irritability of the stomach, hyperaesthesia or anaesthesia semi-paralytic-vasomotor disturbances such as swelling or oedema of the lower extremities, dropsical conditions heart palpitation or arrhythmia.

Treatment.

Treat largely symptomatically to relieve the symptoms and other disturbances. After this constitutional treatment especially directed to the spinal cord to strengthen the nervous system, to quiet the nervous conditions and to coordinate the two nervous systems in their actions. Secondarily to this ---

1. Be careful not to bring on the menstrual flow by any of the specific treatments causing menstrual flow, before mentioned such as hard or strong treatment in the lumbosacral region and over the symphysis pubis, unless pelvic congestion becomes so strongly established that it is necessary to cause menstruation to relieve it

2. Give regular treatment to equalize the circulation of the blood between the pelvis and the rest of the body

3. Give regular treatment to equalize the sympathetic and cerebro-spinal systems as before mentioned.

4. Give thorough splanchnic treatment to keep up the general splanchnic circulation among the different viscera of the body and in this case treat the splanchnic area upward

5. Always give strong inhibition along the spine at the end of every treatment: generally give

it downward from the head unless some condition calls for it otherwise
Sterility.

In some cases this depends upon mal-formation and in this case it involves the structure of some of the pelvic organs. In the majority of cases, however, sterility is a functional condition representing a symptom or result of some disorganization either of the organic functions or of the sexual functions. This functional condition implies (1) inability to conceive, or (2) inability to carry on the physiological processes following conception. This would technically be classified in the field of abortion or miscarriage, but really falls under sterility representing the inability of the pelvic organs to mature even up to the point of organic body formation. In order that the female sexual organs be normal and not sterile they must discharge several functions. (1) the production of a normal ovum: (2) the transmission of the seminal to the uterine field: (3) reception of the seminal fluid: (4) development and fixation of the fertilized ovum in the uterus. Any cause that prevents the discharge of any of these functions is a cause of sterility, e.g. chronic inflammation of the ovaries preventing the rupture of the follicles by the hyperblastic or hypertrophic condition of the membrane of the follicular capsule. Probably seventy or eighty per cent of the cases of sterility are due to this condition. This is an ovarian not uterine condition and is evidenced by the fact of ovarian enlargement and tenderness in many of these cases.

Among other causes we find prolapse of the ovaries ovarian or parovarian cysts, salpingitis cellulitis or peritonitis displacing or producing adhesions of the fallopian tubes abdominal and pelvic conditions that obstruct the ovarian circulation or bring pressure to bear on the fallopian tubes. Extreme ante-flexion of the congenital type is also a frequent cause of sterility. In this case all the sexual organs are in an embryonic or undeveloped state. Retroflexion is also a cause but in this the immediate cause is a passive congestion of the uterus, endometritis, prolapsed ovaries resulting from retroflexion chronic endometritis resulting in the rigidity of the endometrium or a chronic discharge from the uterus, irregularity in menstruation, cervical lacerations and leucorrhoeal conditions. These causes represent (1) congenital malformation involving the sexual organs: (2) acquired conditions representing certain environmental influences that interfere with func-

tioning of the sexual organs. Among these matter we find nervous irritability and hysterical characteristics reflected particularly from the spinal gastric or intestinal regions

Treatment:-

1. Congenital conditions can in the majority of cases be overcome where there is no marked structural change or deficiency. In accomplishing this hygiene, regularity in life conditions such as sleeping eating, exercise etc. proper clothing and attention to the system during menstruation are particularly to be looked after.

2. Thorough stimulation of the circulation constitutional treatment directed to the nervous system.

3. Particular attention paid to the results of other diseases such as effects of dysmenorrhoea adhesions displacements or organs and inflammatory conditions.

4. Toning up the uterus and its ligaments so as to make it resume and retain its normal place in the pelvis.

5. Overcome such conditions as vaginismus This is not an infrequent condition found in such cases. also the proper direction of nerve energy away from the sexual sphere so as to secure its proper distribution throughout the body. That applies to the class of cases called sexual perverts which physiologically is simply an overstimulation of the nerve energy in the sexual sphere that is, an over concentration of nerve energy which should be distributed to other parts of the body. The first thing noticed often is anæmia lack of appetite the patient does not wish to eat. This must be broken up by careful dietetic measures and treatment to coordinate the nervous activities.

6. Attend to such conditions as anæmia, rheumatism and constitutional tuberculosis uric acid conditions are liable to produce ovaritis and even salpingitis. If these exist in the system they require to be overcome.

7. Overcome any toxic condition associated with the system. That requires to be dealt with from the standpoint (antidotal)

ANDROLOGY

In the male sex we find a number of conditions some of them parallel with those found in the female, other peculiar to the male sex. This field like that of gynecology under osteopathic treatment has yielded exceptionally good results. The lesions that are found extend from the eighth dorsal through the lumbar and sacral regions the innominate,

lesions in the inguinal regions, and in the region of the symphysis pubis. The most common general lesion is a posterior lumbar or posterior lower dorsal. The common individual lesions are the eleventh dorsal and second lumbar, fifth lumbar and rigidity of the fourth and fifth sacra.

The nerve supply to the genital organs is (a) mesomotor to the internal and external genitalia ninth dorsal to first lumbar second to fifth lumbar and sacral nerves (nervi erigentes dilators).

(b) sensory fibres to the epididymus eleventh dorsal to first lumbar to prostate gland tenth dorsal (cerebro spinal) tenth dorsal to twelfth dorsal, fifth lumbar, first to third sacra (sympathetic). I think the extensive nerve supply to the prostate gland is the cause of so much trouble there because conditions tend to settle there by reflex irritation. These lesions represent exciting causes irritating causes or direct traumatism conditions producing an interference with the nerve and blood supply to the sexual organs. In some cases the sexual disturbance are secondary to other conditions, such as hemorrhoids rectal and bladder conditions, kidney diseases and heart troubles; other conditions such as rheumatism gout and the nervous diseases have an exhaustive effect on the sexual organs. In these cases lesions will be found corresponding with the primary condition. In addition we frequently find in these cases secondary lesions at the second lumbar or below that point, the lesion in this case maintaining the exhausted, irritating or diseased condition of the sexual organs. This is a type of disease in which the primary and secondary lesions are so well marked, e.g. the posterior lumbar which is secondary to some other condition.

IMPERFECT DEVELOPMENT OF THE SEXUAL ORGANS

This is a condition that is sometimes found hereditary sometimes as an after effect of certain diseases like meningial diseases and several of the nervous diseases.

Treatment in this case is the general stimulation of the blood and nerve supply with the correction of any local obstructing lesions:-

1. Thorough treatment at the tenth and eleventh dorsal over the hypogastric and pelvic plexuses
2. Thorough relaxation of the sacral region and strong inhibition over the sacrum pulling up the liabe backward as far as possible
3. Stimulation of the iliac circulation of the pudic nerves and relaxation of all of the soft

tissues in the lower abdominal, symphysis and sub-pubic areas.

6. Flex the limbs and give a similar treatment to raise the bladder as is given in the gynecological field to raise the uterus: follow this by strong inhibition over the symphysis pubis. This treatment affects the spermatic cord and in that way controls the circulation of the nerve supply which pass together to the sexual organs.

UNDESCENDED TESTICLE

In the child this can be remedied by general treatment such as just outlined. In addition give thorough relaxation in the inguinal and femoral regions so as to relax all the soft tissues. Follow this by suprapubic pressure downward just above the inguinal ring while gently flexing the limb on that same side and rotating gently outward. This treatment ought to be given every day in the case of a growing child.

As to the possibility of dealing with this condition in a grown person most writer's, Osteopaths and others claim it can be dealt with only surgically. I treated one case a young man of twenty seven years of age where it was necessary to give the above treatment. Of course the testicle was in an undeveloped condition and thus was easier to get down into its normal position. Such cases in little boys are more common than is supposed. In later years it is thought to be bladder and urinary conditions, e.g. a child is circumcised when the condition is really the undescended testicle. This should be always carefully looked after in small children.

ORCHITIS.

Here is an inflammatory condition of the testicles sometimes secondary to overexertion particularly lifting and straining the body. In most cases this is secondary to measles or scarlet feverumps sometimes whooping cough. One case from over strain had the inguinal glands enlarged to the size of the fist.

Lesions are found at the fourth and fifth lumbar tenth and eleventh dorsals anterior posterior or lateral. There is great pain and tenderness in the iliac region rigid muscles in the lower abdomen and along the lumbo-sacral region. In traumatic cases the testicle becomes very much swollen and congested and there is localized temperature. In some cases the organs become oedematous, e.g. where there are heart complications with the lesions of the innominates. A bad case enormous swelling with oedema and with a history of rheumatism and heart conditions.

Treatment

Remove all irritating causes and lesions.

2. Thorough abdominal treatment to relax all the soft tissues, equalize the circulation and remove the increased tension and pressure from the blood and lymph.

3. Articulation of the innominatee as before described. Follow this by treatment of the soft tissues around the inguinal canal to establish through drainage from the testicles. Follow this by treatment along the path of the spermatic vessels up to the renal vein on the left and towards the inferior vena cava on the right. To reach the spermatic vessels give deep pressure following a line beginning at the umbilicus one inch

external to it, downward toward the symphysis pubis, so as to pass about an inch and a half internal to the anterior superior spine of the ilium. For drainage the main treatment here would be upward along that line.

4. Look to the condition of the diaphragm and lower ribs giving thorough expansion to the diaphragm and spreading the ribs.

5. Pull up the abdominal viscera from the iliac region on both sides to free the circulation.

6. Have the patient lie on the face with the pelvis elevated and give frequently thorough articulation of the lower dorsal and lumbar regions. Many M.D.'s and Osteopaths make the mistake in that way of having the patient lie on the back. You here convert the inflammatory condition into a spinal condition and this point applies in all cases of pelvic inflammation.

PROSTATITIS

Here is an inflammatory condition with a continued congestion of the prostate gland. In making an examination here have the patient lying on the right side--(in female the best position is on the left side) Insert the index finger into the rectum, palm downward and examine first the condition of the rectal walls looking particularly for relaxation and prolapse and in some cases overlapping or dropping of the walls. This overlapping is found chiefly in the neighborhood of the gland and in some cases where the overlapping becomes adherent this is a cause of chronic prostatitis. This overlapping condition must be carefully looked for.

The gland is located underneath the anterior wall of the rectum and is best palpated about an inch and a half from the anus. Generally the enlargement involves one of the lateral lobes;

in some cases there is urethral stricture and suspended and suppressed micturition

Symptoms are a sense of fullness and weight accompanied by pressure pain radiating in all directions and more or less burning.

Treatment;-

1. Give general treatment to the circulation particularly in the inguinal regions.

2. Thorough extension to the spine followed by stretching of the gluteal, perineal and abdominal muscles. The last is best done with the patient in the face and springing the limbs separately up and out.

3. Local treatment per rectum. This is aimed (a) at freeing the soft tissues around the gland; (b) straightening out the prolapsed and overcoming the weakened condition of the rectal walls: (c) apply pressure around the gland and moving over the gland laterally to assist the blood drainage. This local treatment ought not to be given oftener than once a week.

4. Thorough articulation of the spine and innominates.

5. Thorough rotation of the limbs: deep pressure over the symphysis and deep moving pressure over the saphenous opening, the common and internal iliac vessels.

6. Deep abdominal treatment to relieve local congestion.

HEMI VARICOCELE

This represents a varicosed condition of the veins which become sacculated with the accumulated blood in a static condition. The lesions are found in the lower lumbar and sacral regions, destroying the vaso-motor control and allowing the sluggish condition of the circulation to pass into a venous stasis

Symptoms are sensation of weight with a constant dull ache and a dragging sensation downward. This is found almost entirely on the left side due to the anatomy of the circulation.

Treatment.

1 Strengthen the general circulation and attempt to establish coordination between the pelvic and other circulation.

2. Treat the veins directly by local pressure to empty out the static blood, continuing the deep pressure upward along the spermatic vein to its junction with the renal vein along the line spoken of.

Relax all the soft tissues in the inguinal

canal in order to remove all irritating pressure from the veins.

4. Lift up the abdominal viscera from the blood vessels. If there is great relaxation in the abdominal region give treatment to pull up the abdominal muscles and if necessary have the patient wear an abdominal band for a time.

5. Keep the bowels open.

6. Give tonic treatments to strengthen the blood vessels. In this connection the frequent use of cold water applied locally will tend to contract and drive the blood out. The best method is to use hot water first to get as much relaxation as possible and then the use of cold water immediately after.

7. Give spinal and abdominal treatment to keep the muscle tissues in a thoroughly tonic condition.

SPERMATORRHEA

Here is a condition of involuntary sexual excretion secondary to neurasthenic or neuritic conditions; excesses sometimes irritation of the bladder; urethral and prostatic irritation. This is the common if not the only cause of impotence in the male sex, corresponding with sterility in the female sex, discussed before. The immediate cause is engorgement of the sexual organs which produces an inflammation of the mucous membrane of those organs. The erectile condition is caused by the contraction of the erector muscles shutting off the return flow of the venous blood and producing an engorgement in the sinuses. The erector muscle is supplied by the perineal branch of the internal pudic. Contractile stimuli originate, (a) in the brain; (b) some external irritation; (c) some vertebral lesion in the lumbar region, the reflex from this stimulus passes through the first and second lumbar centers.

Seminal excretion takes place reflexly the reflex being, (a) stimulus of the nerves of the glands, internal pudic transmission taking place through the spinal cord. (b) The efferent fibres from the fourth and fifth lumbar through the hypogastric plexus. Sympathetic nerves supply the seminal vesicles furnishing the stimulus to the peristaltic visceral action. Therefore the excretory function is two fold (a) cerebro spinal from the lower lumbar and (b) sympathetic through the hypogastric and pelvic plexuses.

Irritations or lesions producing continued congestion urethral inflammation and prostatic engorgement result in the weakening of the nerve force. Some of these conditions are caused by traumatism, e.g. prostatic enlargement with urethral stricture secondary to bicycle or horse back riding: lesions in the lumbar region, first,

second and third, representing the genital-spinal center; great contraction and rigidity of the lumbar muscles; lesions from ninth to eleventh dorsals representing vaso-motor disturbances; depression of the ribs posterior condition of the entire lower dorsal and lumbar regions; lesions at the fourth and fifth lumbar and sacral rigidity; sometimes constitutional conditions such as diabetes.

Insufficient erectile is a cerebro-spine condition for lesions in the cerebro-spinal area. Deficient seminal excretory power is a lymphatic condition the sympathetic nerves to the seminal vesicles being in a neurotic state.

TREATMENT

1. Thorough relaxation of spinal muscles
2. Thorough stimulation by articulation of the spinal ~~ax~~ nerves from the fifth dorsal down.
3. Correction of lesions, particularly lumbar and innominate lesions
4. Stimulation of the sacral nerves that represent the nervi erigentes--- with the patient on the face apply strong moving pressure over the sacrum and spring back the limbs and innominates so as to spring back the sacro iliac articulations.
5. Stimulation of the perineal branch of the pudic nerve as it passes over the spine of the ischium in order to give tonic treatment to the erectile muscle tissue.
6. Attend to the irritating conditions
 - (a) enlarged prostatic gland; (b) constipation which must always be carefully noted and treated
 - (c) nervousness -- tret from the neursthenic side. (d) mental conditions as in a case where you must get control of the mind of the patient and get his mind away from the one all absorbing topic on the mind. (e) dietetic conditions--- eliminate all stimulants of every kind and have the patient use plain and very easily digested food. (f) the patient must be kept physically busy as lack of occupation is a common cause of the mental and nervous irritations.
7. Tonic stimulative treatments general in its character followed by sedative inhibition to the nervous system along the spine
8. Frequent use of a general cold bath and local perineal cold douches, and in addition to having the patient work, have him take physical culture or exercise to work off the nerve energy available. As before mentioned I think th excess of blood and nerve supply in that area is one of the chief causes of the condition. Hence whatever

tends to create thorough general circulation and to work off the excess of nerve energy tends to aid in the cure of the condition.