

PRINCIPLES

—OF—

OSTEOPATHY.

PART TWO.

—BY—

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PREFACE.

SINCE the first appearance of this work, the course of lectures of which the first edition was composed, has been increased in number to forty-four.

The first edition contained discussions of theory, together with a review of the human body, part by part, with indications for Osteopathic examination and treatment of the same. The second edition contains in addition, lectures upon specific disease, with descriptions of the Osteopathic method of examination and treatment of the same. A limited number of cases has been thus treated, the idea being not to make this volume a Practice of Osteopathy, but to show the method employed in diagnosis and treatment of the several different classes of cases that the Osteopath meets in daily practice. For example: acute conditions, such as typhoid fever, diarrhœa, and the like, and on the other hand, chronic affections, such as spinal curvatures, constipation and other complaints of a similar nature, have been dealt with.

To this there have been added a few lectures upon the History of Medicine, and a brief consideration of other systems of healing, such as Faith Cure, Massage, Electricity, etc., in order that the student may know the principles of such systems, and learn to point out the independence of Osteopathy from them all.

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Principles of Osteopathy.

PART II.

LECTURE I.

SPINAL CURVATURES.

The Osteopath meets with many cases of spinal curvature in his daily practice, no matter where he may be located. It is a common and much dreaded disease. The Osteopath gets many cases to treat because he is the "bone-doctor," and people are quicker to come to him with such complaints, or, it may be, the failures of the usual modes of treatment adopted by the medical profession leave many cases for the Osteopath. He is successful in a fair number of cases, but finds many of too long standing to be cured by him, though he almost invariably benefits them. In curable cases, his success is flattering, presenting the most complete cures.

Of these, lateral, and simple posterior curvatures are most easily cured.

The importance of the spine has been noted. It might be called the foundation of the skeleton; since it supports all the important parts of the body, perhaps on the whole, more than do the limbs. It gets but little rest; e. g. any one with a troublesome "backache" finds the spine very much in evidence; at times neither sitting, standing nor lying, in any position will relieve the pain of the ache. Osteopaths should be careful of their own.

To fulfill its functions, the spinal column must be at once strong and flexible, and the wonderful device by which this object is accomplished is worked out by means of an intricate arrangement of bones, ligaments and cartilages, muscles, blood-vessels and nerves, each of which seems liable to its particular disability. The cancellous bodies of the vertebræ are liable to caries and necroses; the intervertebral discs, to ulceration, suppuration and changes of form from pressure; the ligaments to strains and rheumatic affections, the muscles to paralysis and spasms; and the blood-vessels and nerves, in this situation, to compression and abridgment of function. Hence it is that to the Osteopath the spine becomes the foundation in a different and very important sense, and he regards the condition of the spine, rightly, as experience proves, to be the foundation of health or disease.

The fact of the compressibility of the intervertebral discs is one of great importance:

1. The whole spine becomes "settled" down together, rigid, smooth,

interfering with general nerve connections; causing nervous and special organic diseases, and functional troubles.

2. Any single or several discs may be altered in shape by pressure, e. g. altering spinal equilibrium and interfering with important nerves or centers.

3. May be ulcerated and eaten away, leading to ankylosis and leading to permanent injury of the joint.

4. Important part of spinal treatment is to separate vertebræ and allow discs free blood supply and room for growth. Treatment by suspension accomplishes this, as does also traction of the spine, described to you as a "straight pull."

Question of slight vs. extensive change in form of spine, with vast difference in effects: 1. Latter is gradual and parts become accommodated to changed shape of the spine. 2. Former more severe and accompanied by acute pathological state of tissues. Question hard to answer. e. g. Hunchback and good general health vs. slight slip.

Several kinds of spinal curvature are described: 1. Pott's disease (Posterior angular curvature.) 2. Scoliosis (Lateral curvature.) 3. Kyphosis (Post. round shoulders.) 4. Lordosis Ant, (Ant. in lumbar.) 5. Spastic (Spasms of muscles.) 6. Hysterical.

Pott's disease (Percival Pott), an inflammation of the spine, characterized by destruction of the cancellous bodies of the vertebræ and intervertebral discs, leaving the front parts of the vertebræ to settle together and produce post. angular projection, called also tuberculosis of spine, caries or osteitis of spine, post. angular curvature, anter.-post. curvature, spondylitis, etc.

The ulceration and destruction of the bodies and intervertebral discs may be partial or complete; the process may begin in either structure, and it usually terminates in ankylosis of the affected joints. Usually the disease begins in ulceration of the cartilage and the adjacent surfaces of the vertebræ suffer from caries and necrosis. When the bodies of the vertebræ are the first to be attacked, they suffer from primary necrosis, which seems particularly liable to attack cancellous bony structures. The disease spreads to involve a greater or less amount of the anterior portion of the spine, destroys it, and causes the characteristic posterior projection. This is most characteristic as angular curvature when it occurs in the middle dorsal region, the long spines causing the peculiar angular appearance. But in the cervical and lumbar regions merely an obtuse post. projection obtains, on account of the shorter spinous processes in these regions. Even this amount of curvature may be absent in well marked cases.

Pott's disease is most usual in children between three and ten years of age and of a tubercular diathesis, but all ages and conditions are subject to it. It seems to be fairly rare; one in thirteen of my cases, this one being typical.

The *Ætiology* of this disease is particularly interesting to the Osteopath for two reasons: 1. It introduces the germ theory, which will be discussed later, in connection with Osteopathic treatment of spinal curvatures. 2. It

emphasizes the importance of slight mechanical causes, e. g. blows, wrenches, or strains, etc., as factors, or rather, as original causes, in the production of disease.

The American Text Book of Surgery states that while slight traumatism is usually the cause to which the disease is ascribed, the tubercular diathesis or soil is essential to the production of the typical disease. Quain, however, lays more stress upon violence as the cause, and states that frequently cases are met with whose family history is free from scrofula, and Farnum, in a text of April '98, says that the microscope fails to reveal the tubercle bacilli in but a few cases. Thus the doctors disagree. Cases are frequent in children after diseases such as whooping cough, measles and scarlet fever, in which the constitution is weakened. In the adult, syphilis and rheumatism predispose to the disease, as they affect the joints.

The direct cause seems to be generally some violence. Quain, speaking of cases in children of good family history who had never had any sickness, says: "In such cases we can hardly doubt that some slight accident met with in boisterous play, must have been the immediate cause of the disease: and in some instances the writer has obtained undoubted evidence of this fact." He also mentions such a cause as the strain upon the spine occasioned by a man, in sport, catching a child by the arms, and swinging him around upon his back. The violence of course may be direct and severe, as in bad falls and blows. The Osteopath continually emphasizes the importance of such injuries as causes of disease, through the effect they have upon the spine, not so often in producing curvatures, but in producing unnatural conditions in the spine, which interfere with nerve force and cause various diseases. What others forget he strives to remember, and frequently is sure that some old injury, either unnoticed or long forgotten is the source of present ill. Frequently the patient will recall such causes.

ÆTIOLOGY:—Constitutional—e. g. syphilis, rheumatism, scarlet fever, measles, whooping cough, etc., tuberculosis, scrofula, local violence, direct or indirect.

PATHOLOGY:—Caries and necrosis, ulceration of discs and formation of the angle have already been noted. Further consideration of the pathology raises additional points of significance to the Osteopath. The inflammation of the parts may effect the cord itself (myelitis) causing paralysis which varies according to the region of the cord affected. Or, the inflammation may cause what is known as inflammatory pachymeningitis, i. e. a thickening of the fibrous tissues between the dura-mater and the walls of the spinal canal. Their growth may occur only along the anterior, pressing upon the anterior part of the cord and the motor nerve roots, causing motor paralysis. This is the most usual condition, but the growth of tissues may affect both anterior and posterior parts of the cord, causing both motor and sensory paralysis. Sequestra are formed (portions of the bone eaten off and surrounded by fibrous coat,) or deposits occur and bring

pressure upon the cord. The same may be caused by the dislodged vertebrae, or by narrowing or obliteration of the canal. These causes, of course, irritate the nervous mechanism, and pervert or suspend its operations, e. g., the irritation may be upon a certain center, be transmitted from cord to sympathetics and affect any important organ or organs in their vital operations. These are the reasons for the great pain and distress and the very bad general health noted in a patient with Pott's disease.

Just so the Osteopath in any ordinary case lays great stress upon any strain or injury to the spine. 1. Strain followed by inflammation and thickened tissues. 2. Hyperaemia affecting centers. 3. Slips or twists of vertebrae causing direct pressure, or act as strains. 4. Deposits irritating centers, etc. 5. Rheumatic affection of the joints. All affect nerve mechanism, reach the sympathetic system usually, and have far reaching results. This is shown in its worst form in Pott's disease. Muscular rigidity seen in Pott's disease is due to deep irritation of the nerves acting reflexly upon the muscles.

Symptoms: Variable, according to part of spine affected. The early symptoms are ill-defined (first six to nine months making diagnosis difficult) but the patient lacks energy, is irritable, not well; poor vitality. There is pain upon motion and upon percussion of affected parts of the spine. Muscular stiffness and rigidity become prominent on account of irritation of nerves; patient makes unconscious efforts to shield the part from pain. The muscular stiffness causes characteristic attitudes: cervical, wry-neck; upper dorsal, neck pushed forward, chin raised and shoulders fixed; lower dorsal, military attitude; lumbar, lordosis, by contraction of the psoas muscles. Abscesses following along the psoas may contract the thigh and cause the case to resemble hip-joint disease.

While the chief deformity of Pott's disease is spinal curvature, this feature may be absent in cases where the disease develops late in life. A slight lateral sweep of the curve may occur, indicating destruction of the lateral portions of the vertebrae. Secondary curves are formed, e. g.: dorsal kyphosis with lumbar Lordosis. Quain notes two points at which may occur a spurious form of posterior curvature, i. e. seventh cervical and first dorsal vertebrae, also eighth and ninth dorsal vertebrae, naturally prominent points. This condition being sometimes exaggerated; accompanied with pain. This is not real curvature. The former (seventh cervical and first dorsal vertebrae) is often noticed in hysterical girls.

Pain is an important symptom, being both local and distant, being roused locally by percussion. Yet the patient complains but little of pain along the spine, it usually being referred, e. g., in cervical disease to the throat, neck and arms; in dorsal disease, to the chest, intercostal and epigastric pains, coughing and palpitation of the heart; in lumbar disease the pains are colicky, the bladder is irritated and pains shoot down the lower limbs. Motion increases the pain, e. g. turning, jumping or pressing down the head. This fact causes the patient to hold the spine as quiet as possible. The pain, not usually acute,

becomes sometimes lancinating. Some few cases run a slow course it is said, with but little pain. Paralysis is a frequent symptom; may affect the lower limbs, or the sphincters. On an average it lasts from one to three years. Peculiar attitudes constitute another important symptom. The patient goes about supporting himself upon some object, e. g. furniture. If the disease is cervical or upper dorsal, he rests the chin upon the elbows, if lower, he rests the hands upon the hips, or walks about with body bent and hands supported upon the knees, always with the effort to relieve the affected portion of the spine of the superincumbent weight of the body.

Abscesses are frequent. They occur as retro-pharyngeal, dorsal, iliac, lumbar, or psoas abscesses, being the products of suppuration following the ulceration and destruction of the parts. The pus gathers in the sheaths of the muscles and comes to the surface at the points named. Osteopathy, if used in time, should prevent their formation or cause them, where small, to be absorbed.

There are with Pott's disease, general constitutional disturbances, asthma, heart disease, indigestion, abnormal temperature, (99° to 101° F), fretfulness, chills, loss of appetite, cold extremities, etc. The disease, if left to run its course, terminates in bony ankylosis of the affected joints, and cure, with permanent deformity as an essential of such cure, or it ends in death from paralysis, myelitis, and general ill health.

Mortality in children 1-20; in adults 1-5. Thus the prognosis is more favorable in children than in adults, and unfavorable in proportion as the disease progresses rapidly.

CHAPTER II.

LATERAL SPINAL CURVATURE:—SCOLIOSIS. This is perhaps the most common form of spinal curvature, and is, fortunately for the patient, usually (readily) cured by Osteopathic treatment. By far the larger per cent. of the cases coming under my supervision have been lateral curves. In lateral curvatures, called also Scoliosis and Rotary Lateral Curvature, the spine describes two or more lateral curves, according to the American Text Book of Surgery; other texts do not thus imply the invariable presence of the secondary curve. I have seen cases in which there was but one lateral deviation. The rule, however, is to have a second lateral curve with its convexity in the opposite direction, while there may be three, or even four, or five curves, each compensating the other. I am treating a case at present in which there are two; there has been a third, but that has been straightened out. That was in the lumbar region. The primary curve was in the dorsal region. There was one up in the cervical region as well. Another case, which I might treat as similar, was one in which there was a very bad curve in the neck, followed by a very marked lateral curvature between the shoulders.

Practice of Osteopathy: Idea of Compensation:—Curvatures caused by tilting of pelvis or dislocation of hip. I believe I spoke of this matter of compensation the other day. That is, nature is undertaking to restore the equilibrium of the body which is lost by the formation of one lateral curve, and this may be further carried out in the pelvis or in dislocation of the hip. I had a case of dislocation of the hip on the left side which had been followed by lateral curvature in the lumbar region toward the right, making a sort of compensation in that way. Again, I had a case in which there was wry-neck. The neck bent to one side and even that seemed to change the equilibrium, throwing the weight on the opposite side on the sacro-iliac ligaments. You see how badly such a case may affect equilibrium of the spine which is so delicate, and thus cause a change in the parts to meet the new conditions.

Lateral curvature is said to be more frequent in girls than in boys, and frequently is so slight as to be unnoticed until discovered by accident. I had a case not long ago in which there was a marked lateral curvature to the left taking in most of the spine from the cervical region down. They told me that they had not noticed the curvature coming on until it was pronounced, and you will find that so in quite a number of cases.

Aetiology:—The causes of the disease may be local, e. g. faulty position; constitutional, e. g. ricketts; or both. The most usual cause seems to be weakness, the spinal muscles giving way more on one side than on the other, allowing the spine to sag. Such weakness is often apparent as the result of rapid growth or of sickness. Dr. Harry Still had a case in which the patient had a very tender spine, and we found after we had been treating him for some time that he had a slight curvature. These things arise sometimes without apparent cause. For instance, I knew a young man in splendid health who had a marked lateral curvature. He had had no bad accident or apparent cause. It seemed in his case to be simply due to very rapid growth. He was over six feet tall. It seems that the system is not always able to stand the strain upon it by rapid growth. I had another case exactly similar.

A habitual faulty position, e. g., sitting at a desk, e. g., holding an infant always on one arm, will frequently cause it. Carrying a heavy weight, as school books, or a heavy child, may become a cause. I knew of a young lady who carried her heavy infant brother about. Without doubt this was the cause of her trouble.

Obliquity of the Pelvis:—I noted a case of a young girl with the left hip dislocated upward, the curvature of the spine taking place with the convexity toward the right in the lumbar region as a compensation. As far as I was able to learn the curvature was caused in this way, as the mother did not know that it had occurred until I pointed it out. Unilateral muscular atrophy, or hypertrophy, or muscular spasms from a central cause will all act as causes of lateral curvature. A ricketty condition will also weaken the

spine and cause this curvature, as will empyema, through muscular fixation of the affected side. I have known several cases in which the curvature came on without apparent cause, previous illness or anything of that kind. I noted the other day a case of a young man who developed lateral curvature and had, following that, locomotor ataxia. His case came on without apparent cause. Quain assigns heredity as a predisposing cause.

ANATOMICAL CHARACTERS:—The spine does not simply yield laterally, but the bodies of the vertebrae turn so that the anterior aspect of the body of the vertebrae comes to look laterally in the center of a curvature having described the quadrant of circle. The transverse processes project anteriorly and posteriorly; the spinous processes, laterally. The bodies turn outward so as always to be upon the convexity of the curvature. The transverse processes are anterior and posterior, the spinous process is laterally in the opposite direction from the body of the vertebrae. You see that you have a great change in the condition of the spine. I cannot make it appear as it naturally would in case of curvature. The discs as well as the bones become eaten away. You have a condition of changed form of bone, ligaments and muscles. I think that this will well illustrate to you what we have to deal with in case of lateral curvature. The relations of the ribs are changed, bulging backward at their angles or the convex side carried forward on the opposite side, and making a deep depression along the concavity of the spine. On the convex side the ribs become much more oblique than before; on the concave side, more horizontal and wider apart. The bodies always deviate more than the spinous processes, and thus you see that you have a condition that is not fully indicated by the alignment of the spinous processes, so do not be misled by what you see like that. Quain does not consider the deviation of the spines any sign of a curvature.

PATHOLOGY:—The bones, ligaments, muscles and vertebrae all undergo a pathological change during the course of the disease, accommodating themselves to the new formation of the parts. The intervertebral cartilages become compressed on one side by the unequal pressure, and assume a wedge shape, the thin edge of the wedge being toward the concave side. Pressure and absorption also gradually alter the shape of the vertebrae and of their articular processes. You readily see what a strain comes upon these processes, and the facets gradually wear away, facing another direction, instead of back and up. So you see how extensive the change is. The vertebrae become more or less wedge shaped, while the direction of faces of the articular processes becomes changed. These structural changes confirm the condition of the curvature and make it more difficult to cure. If a man comes to you and wants to know how soon you can cure a lateral curvature, you will have to tell him that the case is such that you will have to alter even the shape of the bone before you can effect a cure.

Late authorities describe the muscles and ligaments as relaxed and atrophied on the convex side, and contracted and strengthened on the con-

cave side. Quain disagrees with this, stating that the muscles are simply displaced on the concave side, pushed together and thus apparently contracted. You can readily see how this could be. The muscles and ligaments are weakened on this convex side, and become atrophied because pushed out of place, while these on the other side will become contracted, because it is a rule that if you approximate the points of origin and insertion of a muscle it will contract to conform to the changed position. Quain says they are simply pushed over and in that way apparently contracted, while the later authorities, as you will see, say that there is a distinct change of condition on this side.

Anteriorly the sternum becomes very oblique, and the cartilages of the concave side bent upon themselves. The thoracic and abdominal organs are displaced and interfered with, often causing organic troubles.

The lung on the concave side is compressed; the heart may, in some case, be displaced to the right side; the liver and stomach and intestines are forced downward; while the kidney and spleen on the convex side are said to be usually smaller than on the other side. In cases of a rachitic character there is often deformity of the pelvis.

Symptoms:—The curvature is often so slow in development that it remains unnoticed for a considerable time, being noticed first in fitting clothes by a dress-maker, and sometimes the suspender slips off the shoulder too easily, or one scapula is a little too prominent, or some slight irregularity in the patient's gait is noticed. One shoulder is higher. If on the left (left deviation), the right breast and iliac crest will be slightly too prominent, the curve of the waist deeper on the right, and the distance from the right axilla to the hip is shorter. That is one place where you may make a valuable measurement. I would advise you always in these cases to make measurements. I have a case of very marked curvature, extremely to the right; on the left side the hip is up so that the ribs as high up as the sixth or seventh rib fall down over the crest of the ilium. That is one of the most marked cases of curvature that I have seen, and was caused by a fall from a swing. Quain states that the diagnosis cannot be made simply upon the lateral deviation of the spine, since this often occurs in weakness or in hysterical conditions. The diagnosis must rest upon the torsion of the vertebræ and changed direction of the transverse processes.

Symptoms of nervousness, palpitation of the heart, shortness of breath, indigestion, etc., are often present, as are also indisposition to exercise, vague feelings of discomfort, and pain and tenderness in the back.

Suspension will cause the curve to disappear in mild and short time cases. Those which do not thus disappear have become strongly fixed. If the curve persists until maturity, it as a rule remains throughout life. Osteopathic experience is contrary to this. I might say that cases of people well advanced in life have been rendered fairly straight, although it seems that maturity has limited our practice somewhat in that respect. It is also

stated that the prognosis is unfavorable in proportion to the youth of the subject when the curve begins. Here also Osteopathic experience is at variance with the authorities. A double curvature is likely to be self limited, by the arms of the "S" reaching equality and establishing an even balance. Thus you readily see here if you have a curvature occurring first in the upper dorsal or in the cervical, you are liable to have a curvature on the other side lower down, since nature has to restore the equilibrium. Thus a curvature is apt to be self limited, not self cured, but more curves may appear as you already see. The long single curve is apt to lead to the greatest deformity. The great majority of cases reach a certain stage, become stationary, and pass through life with slight deformity and but little trouble from the curvature. In some cases, however, progressive deformity leads to immense distortion.

Hysterical Curvature:—A form of curvature described as a lateral curvature which may be made to disappear by causing the patient to bend forward until the tips of the fingers touch the ground.

Kyphosis or posterior curvature is a term used to describe the common condition of round shoulders, as is usually found in the upper dorsal region. The same term, however, is descriptive of ordinary posterior curvature of any portion of the spine, but not of Pott's disease, commonly, though sometimes used as a synonym for that term. Its causes seem to be, in general, those which have been described for lateral curvature, viz: faulty position, weakness and debility, paralysis, ricketts, etc. For example, it is found in infants who have been allowed to sit up too much; in growing girls who sit in bad positions at school or at the piano; in professional men who bend over desks; or in bicycle riders who assume an extreme position. Old age and debility weaken the muscles of the back, and allow the spine to bend. Years of hard work, e. g., as in miners, shoemakers, etc., is also a cause. Sometimes it is the result of positions assumed to ease pain, as in asthma, meritis and rheumatism.

Pathology:—The chief features are a relaxation of the spinal ligaments at the spot affected, allowing a protrusion of the spinous processes, and a separation from each other; an approximation of the bodies anteriorly, resulting in destruction of the edges of the intervertebral discs and of the bodies of the vertebræ from pressure atrophy. In old age ossification of the joints may have occurred. The stature is diminished. It must be distinguished from Pott's disease by the rounded, instead of the angular curvature; by the absence of muscular rigidity, tenderness, pain and symptoms of involvement of the cord.

It is stated that infants usually recover from the disease spontaneously; children generally recover upon exercise. If present at maturity it remains during life, but amounts to but small deformity in the adult. If occurring late in life it is apt to be progressive.

Lordosis or anterior curvature is rather rare. It is usually in the lum-

bar or in the dorso-lumbar region, often being the secondary curvature in Pott's disease. In this affection the hips are prominent behind, and the pubis is depressed, showing a tilting of the pelvis. The causes are commonly weakness of the muscles and ligaments of the lower portion of the spine, as in rickets and paralysis, great weight of the abdomen, as in ascites or pregnancy, and in persons with a naturally large or fatty abdomen, seems to be the cause of the trouble. It is met in certain diseases of the hip in which the joints are partly flexed. Structural changes occur in the nature of relaxed and lengthened anterior muscles and ligaments, the reverse being true of these posterior structures. Also there is a change of form in the vertebræ and intervertebral discs. They become wedge shaped by pressure atrophy, with their thick edges backward. After maturity the deformity is apt to become permanent, but in many cases disappears in a few months.

LECTURE III.

To-day I wish to illustrate the treatment of spinal curvatures. In treatment of spinal curvature we should consider first the theory and in the second place the practice. The description of theory might be divided into first, the mechanical work purely. We have to do a certain amount of mechanical work upon the spine. Parts are out of place and just as you would pile up a pile of blocks that have been knocked over, it is a mechanical matter to readjust all of the parts which are out of place. That part of our work is purely and simply mechanical. You might pile up a pile of lumber but if you want to be perfectly sure of its remaining so you will have to put supports about it, hence we will have to do something more than simply put parts back mechanically. The muscles and ligaments must be strengthened and stimulated to hold them in place. Since the muscles, ligaments and vertebræ are affected by blood and nerve supply, these parts in the normal spine are retained in position by free and unobstructed supply of blood

We retain these parts in place by strengthening and stimulating the nerve and blood supply so that the ligaments, muscles, etc., are kept in proper condition.

First, then, as to the mechanical work. Its purpose, as already indicated, is to return parts to place, but we cannot separate these methods of treatment, the strengthening and stimulating must be used together. Not only are the vertebræ out of place, but they are changed in form, they have become flattened down on one side. It is going to be a difficult matter to hold them in place. You must take that into consideration in building up the spine. These parts slipped back mechanically are not going to stay, the first, second or not even the third time. You will have to keep at work on them and return them to place and keep strengthening the ligaments in order that they may be held in place. How can you shape the material so

that it will stand in this delicate column? That question we have to deal with in any spinal curvature. A word as to theory. We must build up and restore lost parts. Tension or suspension as you may readily see, tends to the alignment of the vertebræ. You know how we get this effect upon the spine. You can have some one holding the ankles, and you can exert a great deal of contraction upon the spine, under ordinary circumstances, without danger. However, I have known cases of spinal curvature where the patients were rendered bed-ridden by stretching in this way, so you must be very careful. It is a part of the treatment to see how much the patient can stand. This method of traction is one of the best methods that we have, for reasons that I shall show you later as to the theory; but you see how it is accomplished, with the patient lying upon his back and with the "straight pull." It can also be done in this way; you may have the patient sitting (it is particularly good for small children) having the hips held down, and raising the upper part of the body by reaching over and raising the weight at various points along the spine, from below upward, thus stretching the spine all the way along. There is a method frequently used by surgeons in spinal curvatures. The method is simple and readily shown. You have a suspensory apparatus consisting of a bow of steel with two hooks on either side and with a ring on the top to hang it up by. From the inner hooks are straps leading to the collar which buckles under the chin. On the ends of this bow you have straps descending with supports for the arm. There you have your patient suspended, pulled up with a pulley. His feet are free of the floor and you have the weight of the body then all hung from the point of the greatest curvature, since upon that point comes the greatest traction. That is one of the common methods used by surgeons in the treatment of curvatures. I knew it used in one case. The operator used such a method in a case of our work. It seemed to be very good. The case was a very bad lateral curvature. The stature of the patient was increased about three inches in a month, some students are trying this method now. I, myself, have not tried it.

Besides that you can use this motion which I have already shown you. Have the patient sitting with his back toward you, his hands clasped behind his neck. You then reach under the axilla, and grasp the wrist on each side, then you push the head forward against the resistance of the patient, and stretch the spine back in such a way as to bring tension along the spine. I think that is a very good movement. The tension that is exerted in this way is one of our valuable methods of treating spinal curvature. Another way is to work from the spine, springing the spine toward the concavity. Where the spine is deviated laterally I would have the patient lie upon the side with the convexity upward. I can then work against the convexity, forcing the spine toward the concavity. The muscles on the uppermost side of the body are almost entirely relaxed. You standing in front of the patient, reaching down upon the vertebræ, bring pressure upon

the spine. I usually push the shoulder down toward the curvature, and spring the spine. I find this method very good indeed. You can work from above downward or below upward.

Our second method, then, of mechanically working the spine back into place, is to spring the spine toward the concavity. Another way is to work against the ribs. They being attached to the transverse processes of the vertebræ by ligamentous bands, may thus be used by their connection to some extent to force the vertebræ back into place. The Old Doctor one day showed me, in a certain case, this motion: having the patient upon the side with the convexity upward, he reached over so that the thumb of the left hand was upon the angles of the ribs on the lower side of the body, the fingers of the right hand were against the angles of the ribs on the upper side. He then spread the ribs as you see me doing, springing the upper ones, upon which he was working particularly, down and then upward; having sprung them down to relax them from the transverse processes and to spread the ligaments; and then upward. This of course helps the ribs which are more or less displaced, also helps to draw the vertebræ back into place.

Another way is to have the patient sitting. This method is especially good in cases where the curvature is high up between the shoulders. Work against the ribs in front. You can press with the knee against the anterior ends of the ribs and draw the arm up in such a way as to bring tension, thus exerting such a pressure upon the transverse processes of the vertebræ behind as to help bring them back into place. You should be careful and not press too hard at the knee there, the ribs being joined to the sternum by cartilages which may be ruptured.

Another motion that I use: Have the patient sitting upon a stool, I reach under the arms to the angle of the rib on either side, and then turn the patient from side to side, lifting the superincumbent weight off the vertebræ and springing the spine back toward the original position. Not only do I hold on each side against the angles of the ribs, but I may, releasing one hand, and grasping the arm, reach over the spinous processes, as you see me doing, and thus twist the patient around, get a great deal of force exerted against the spinous processes. This is a mechanical manner of springing back into place that which is misplaced. Further, you may with the patient sitting, stand on the side, thrusting your hand under the axilla on the opposite side, you can thus raise the weight of the patient's body to a considerable extent. I thrust the thumb against the spinous processes, and working with this twisting motion, make the thumb a fixed point and spring the vertebræ back. You can work up and down the spine in that way and tend to bring the vertebræ back. You will notice a great difference in spines. Some are quite mobile, while others are as stiff as iron, and it is very difficult to move them. It depends upon the nature of the case. Another point which the Old Doctor lays stress upon, is to begin at the bottom of the curvature

and work upward; the idea being that the lower vertebræ are larger than those above, and you can work better than from above downward. This may not be an invariable rule. You should have a purpose in your work along the spine. If every day you attempt to replace one vertebræ you are working with a definite point in view. Do not simply work up and down the spine. Fix your attention upon a single vertebræ each day and try to restore it to position, and working from it up you will succeed better.

Q. If there were several vertebrae out would you only work upon one each day?

A. I would give these general treatments described for the general help it would be, but I would direct my attention particularly to getting one back into position, though I would not work on one alone.

Reduce the secondary curvature first, because it is later in date, and as a rule less in extent. Therefore it is more amenable to your treatment and more readily restored. You will find that the secondary curvatures yield first. Those which come first, as a rule are more difficult to restore. I would first remove any appliances which may have been put on in the shape of stays, braces, etc., to allow free motion, freedom of exercise, and the free flow of blood. The removal frees the patient from the irritation which these appliances bring. I do not say this simply to condemn any other practice, but it is our practice to remove them to get the spine to depend upon its own strength. So much then for the purely mechanical theory of our work.

Q. By putting the lower vertebrae back into place would that have a tendency to throw the one above back to some extent?

A. Yes, sir, as far as you could within limits. The whole tendency is to work the one above back with the lower one. You cannot work upon one of the vertebrae entirely independently of the others. That is more a plan of work. Work with the intention to restore first one and then the other.

I hardly need to illustrate what I am about to say in regard to stimulating. You must thoroughly relax all of the muscles along the spine, having the patient upon his face. Stretch the muscles and stimulate them. I think that you already understand that. I believe I have shown you how to manipulate.

Further as to theory: You remember I have spoken of the central distribution of the sympathetic nerve from the ganglia, supplying the ligaments, the vertebrae, dura mater, bones and vessels. I mean the blood vessels going to the muscles, cord, etc., and supplying all of these structures that we work upon. We are not simply relaxing muscles, but we are acting upon the sensory peripheral terminals of the nerves, getting the effect through them. The action upon the sympathetic thus influencing the sympathetic centers, we get the effect upon the spinal column. That I bring out as a point of theory particularly concerned in our work upon the spinal

column. Remember that the ligaments and muscles are holding the parts of the spine in place and depend for strength upon proper flow of blood to them, consequently when you are working upon blood supply your work is primary.

Now a word as to the theory connected with the good of bringing traction upon vertebrae by a straight pull or in the other ways shown. Tension, as you know, spreads the vertebrae and allows the free ingress of the blood to the discs and all of the structures concerned. These have been pressed out of shape. What you wish to do is to so separate that the blood can be thrown to the parts. The effect that you will get is to allow the tendency toward the normal to restore parts to normal shape and condition. So there is one important point in theory as to why we bring the straight pull upon the vertebrae. Thus the vertebrae and the discs are to be built up. You will not have a straight column or a strong spinal column until that has taken place.

The process of ulceration and suppuration may be stopped in Pott's disease, so that you may prevent the posterior angular curvature if you get your case in time, prevent the fixation of the joints. These remarks apply to all the work of stimulation of blood supply along the spine. We, thus by all of these means, increase blood supply, strengthen muscles and ligaments, and cause them to hold the ground regained by holding replaced parts in place. Of course you cannot always have parts stay where you put them. It is, therefore, a process of growth. You must bear in mind when a man comes in with spinal curvature, that to cure it will take time. It must be slow and natural. This will enable you to explain in a great many cases to patients who desire a short period of treatment and expect to be cured.

Spring the spine both ways. Placing the patient upon the side, I spring the spine toward me, then with the patient upon the other side I spring the spine again. You may suppose that you should spring the spine only toward the concavity, but the theory is this, that is springing toward the concavity, then in springing away, you get the effect of recoil. Then you must pay attention to the general health according to the symptoms that you encounter. There are various complications of the heart, lungs and internal viscera or there may be general symptoms, and you must direct your treatment accordingly. Appropriate exercises are good. If your patient has a curvature in the lower dorsal region, anywhere below the shoulders, he can hang upon a horizontal bar by the arms. It is a good exercise for any one. We are always shorter in the evening than when we get up in the morning. It is good practice, this and other appropriate exercise, to strengthen the general health and strengthen the muscles of the back. This of course is not Osteopathic practice, but it is exercise which is useful in aiding you in your treatment.

I might say further that the lateral curve between the shoulders is perhaps the most difficult, and in addition to general stimulation which we give the spine in that region, by working the muscles and springing it from side to side, I have a motion which I think is very good, and which I illustrate in this way: The patient sitting upon the stool, and I standing at the back, I have the thumb of one hand pressed against the spinous process of the vertebra on the side toward the convexity, then I spring the head around toward this side, at the same time pressing the thumb upon the spinous process back toward the concavity and drawing the head around in that direction. This method I have found to be one of the best for reducing curvature between the shoulders, as well as reducing the dislocation of a single vertebra. I think that what I have said you may readily apply to the lower dorsal and lumbar curvatures and secondary curvatures without my saying anything more now.

I will speak a few minutes as to the results. In the first place, in Pott's disease, very many cases have been helped where they have taken treatment in time, and in advanced cases you can do a great deal of good. In advanced cases I have been able to relieve fever and nervous symptoms and general symptoms from which the patient was suffering, by ordinary work along the spine. Often the patient is very weak and you must be careful to not treat strongly. There is one patient that I treat very little, scarcely any at all, but I reduce the fever, and the patient is always relieved.

These cases if taken in time, may be saved from deformity by preventing an angular curve. Where the abscesses have not entirely formed they may be prevented, and the pus may be absorbed. I knew of one case greatly deformed where the symptoms were all relieved, and the patient has been enjoying fairly good health ever since. If you get a case early, good results generally follow.

Kyphosis, posterior curvature, and scoliosis, lateral curvature, in favorable cases are cured. Even where we have not been able to effect a cure, we have been able to prevent further progress. We have been able to change the distorted parts to normal even after maturity, but the early cases give the most gratifying results. This may be accomplished in posterior and lateral curvatures.

We must recognize our limitations. We cannot cure everything and there are many cases that we cannot help. We are very much limited, but we have been able to cure a great number of cases. We have been able to cure more cases than any other system.

A few words as to the methods used by surgeons. They are in spina curvatures chiefly mechanical, with prescriptions of drugs for general health. One practice in very general use is to have the patient lie flat upon the back to relieve the spine from the weight of the body. Sometimes a bed frame is made in this way: an ordinary iron pipe is made into a rectangular frame long enough to accommodate the patient, and a cloth is

spread over it and fastened, making a fixed, firm place upon which to lie, and which may be readily taken up. There are various appliances which are used. Plaster paris jackets are made. The patient is suspended upon a frame and bandages are applied as near the skin as possible to a perfectly fitting under vest. Sometimes these jackets are cut in front and laced so they may be taken off, but generally they are left on. Leather and wire jackets are made, and ingeniously contrived and especially elaborately made braces of great price are used. Objections: All jackets, etc., limit motion, prevent exercise, are often unsanitary; impede blood flow. Braces often do not fit and are outgrown. Mechanical supports do not allow the weak parts to grow strong. Such contrivances irritate nerves and often perpetuate the condition they should cure. Of course the parts cannot be built up and strengthened, because they are depending upon something else. As a rule we remove these things, and leave the patient to have freedom of motion.

Sometimes they have the patient assume a position that will correct the curvature. There is a seat called Volkman's seat, with the chair seat raised upon one side, and the patient sitting thus, stops the curvature by overcorrection. They also have the patient lie down on a table, in such a way as to bend the spine. There are various methods used. I thought I would explain them to you as they may be useful to you sometime.

LECTURE IV.

Typhoid fever, (Enteric fever, Typhus abdominalis) is described as an acute infectious (but not contagious) disease. I treated a case once where the lady next door had bottles of carbolic acid set along on the window sills. A great many people are afraid of it and think it contagious. It is a long continued fever, characterized by certain lesions of the small intestines, which are the seat of the disease.

Actiology. Its cause is now generally held to be a specific micro-organism, the Typhoid bacillus, or bacillus of Eberth, which invades the body and propagates its peculiar poisons, thus infecting the patient and causing the symptoms of the disease.

Contaminated water is the chief avenue of entrance of the germ into the body. Not all bad water is thus a carrier of disease. People often use such water with impunity. Countless millions of the bacilli exist in the feces of the typhoid patients. These are frequently and criminally allowed to go without disinfection by a good germicide. The water in the soil frequently becomes contaminated with sewerage which finds its way into wells, or rivers, and thus into the houses in the drinking water. A heavy, washing rain, in a town or village not well drained by sewers, will wash the germs into wells and cisterns; or the same heavy rain, cleaning up the large, well drained city, flushes its sewers, and carries its impurities into the river which supplies

smaller towns below with water for all purposes. I knew of one case in particular, in which a little girl, some five or six years of age, in going home from school, stopped at an open man-hole in a sewer and played about it for a short time, and she was very soon afterward taken with a very bad case of typhoid fever, and the cause was laid to her playing about the man-hole of this sewer. Such effects may occur.

Cold does not kill the germ. Impure ice is often the source of the infection, as is also adulterated milk and other articles of food. The ice which has been used here I think has been the cause of a number of cases, although, I do not know that it is so much so at the present time.

Typhoid fever is not contagious. Clergymen, physicians and nurses rarely contract it. But this accident sometimes happens in houses where cleanliness is not observed in the matter of bed-clothing, carpets, linen, etc. Quain states that emanations from newly opened cesspools, sewers, etc., may cause the disease, rarely however, through atmospheric contagion. This theory, I believe, is now held to be untenable.

It becomes at once evident that great care should be taken to disinfect the stools and urine, and to adopt antiseptic precautions in washing the linen.

Typhoid usually occurs epidemically in the Autumn (August-November), but in cities, sporadic cases are continually noted at any season.

Some people never take the fever; seeming to be immune. It is stated that heredity seems to predispose to an attack, it being more formidable in a patient who has lost a parent by the disease. One attack does not exempt from another. Young, robust adults are most frequently the victims, the disease seeming to avoid persons with chronic ailments. It is very rare before one year of age, less so between one year and fifteen years; most frequent between fifteen and thirty years of age. Over-work, mental depressions, shock and general debility are predisposing causes. So it is that the child of a parent, who has had a bad case of typhoid fever, may die from the disease. Thus it is that the child, or the brother, or sister who has watched at the bed-side of a patient dying with the fever may have the disease. The shock of the loss of the relative weakens the system and they are taken down. Such cases occur very frequently, and without doubt it is the mental shock which is the predisposing cause.

Typhoid fever is a disease of the small intestines, and affects chiefly Peyer's patches, hence the name Ileo-typhus sometimes applied to it.

Four stages are marked by the condition of the mucous membrane of the small intestines.

(1) In the *congestive stage* the whole membrane is swollen and congested, covered with a slimy exudation.

(2) In the *case of infiltration*, the swelling concentrates upon Peyer's patches, disappearing in other locations. The patches swell and become of a grayish color.

(3) In the *stage of softening*, the glands burst and are covered by a

crumbly crust, or burst and discharge without formation of crust.

(4) In the *stage of ulceration* the patches suppurate and form the *Typhoid ulcer*. The whole gland may now be sloughed off down to the sub-mucous fibrous coat of the intestines, or the muscular coat may be eaten through, and perforation of the bowels take place. Blood vessels may be eroded, resulting in hemorrhage. While the ulceration as a rule affects the Peyer's glands, the latter may be wanting, or little affected, while numerous small ulcerations are scattered over the intestines. The large intestine is rarely affected, the ilio-coecal valve marking the limit of the disease. The mesenteric lymphatic glands become infiltrated and enlarged. The parenchyma of the liver and kidney, the muscle fibers of the heart, and the involuntary muscles generally may undergo granular degeneration. From this cause heart failure may become a complication.

Symptoms: The period of incubation, in which the germ grows in numbers and gains a foothold in the tissues, is usually about two weeks, but it may vary to four. The onset is usually insidious; for a few days before the attack, the patient suffers from headache, malaise, general weakness, dizziness, nose-bleed, pains in the back, loss of sleep and appetite, coated tongue, etc. The attack proper is ushered in with a chill and vomiting. The chilly feeling may be slight or wanting. In typical cases, the bowels may be relaxed, and diarrhoea be present, though often constipation is present. There is gurgling and tenderness upon pressure in the right iliac fossa. The attack may come on violently with few prodromal symptoms.

An almost unfailing sign of typhoid is the temperature variation, so characteristic a course does its rise and fall pursue. During the first week, roughly speaking, it rises until it has reached 103 to 105 degrees F., for another week, or week and a half, it remains high; then for a week to a week and a half it gradually descends. The manner of rise is as follows: for the first four or five days the temperature increases from two to three degrees, with a fall of one to one and one half degrees F. from evening until morning. After reaching its level, it remains about the same, the morning temperature being about from one to one and a half degrees lower than that of the evening. During the period of decline the morning fall exceeds the evening rise, until the normal is reached.

While the temperature is almost invariably characteristic, it has been known to vary some from the usual course.

Another important diagnostic sign is the rose colored rash. This appears about the end of the first week; frequently absent, estimated so in about thirty percent of all cases. The spots are small, reddish, pale, about the size of the head of a pin. They appear in successive crops upon the abdomen, chest and back, lasting until the end of the fever. They disappear upon pressure. Individual spots may be observed by being marked about with ink. The spleen and liver are enlarged and tender.

The symptoms, usually spoken of with regard to the week of the disease, are in great variety, differing much in different patients. During the first

week, in addition to the weakness, dizziness, epistaxis, etc., already mentioned, the abdomen becomes tumid, the tongue is soft and shows the imprints of the teeth. It is covered with a fine white fur which may become heavy, brown and flaky as the disease progresses. At first the edges of the tongue are red, frequently there appears a red streak down the middle, terminating in a wedge-shaped red space at the tip of the tongue. The pupils of the eye dilate. During the second week the temperature keeps about 104 degrees F, the pulse is weak, soft, often *dicrotic*, and varies from 100 to 120 beats; the face assumes a stupid look, the patient is very weak, lies upon the back, slips down in bed, following the weight of the body. There is a dizziness, ringing in the ears, a dry tongue, but the patient does not ask for water; drinks when it is given to him. He answers slowly when spoken to, shows the tongue with difficulty, mutters and is delirious.

In the third week the extreme weakness continues. The bowels are usually loose, owing to the catarrhal condition of the intestines, the cheeks are flushed or cyanotic: the lips and teeth are covered with sordes; the abdomen is inflated, and the dependent parts of the lungs solidified. The temperature is still high; there is a jerking of the tendons (*subsultus tendinum*,) the patient slides further down in bed, and the stools and urine are apt to pass off involuntarily. This is the dangerous week, and the one in which the mortality is the greatest. Bed sores frequently appear at this time, and are to be carefully guarded against. The patient is stupid and delirious and may pick at the bed clothing. In this week the intestinal hemorrhage or the perforation of the bowels may occur. The former may not be serious, but the latter is usually fatal. They are often brought on by some indiscretion, such as the eating of solid food. The climax of the disease is now reached. The patient may die from perforation, hemorrhage, weakness, or some complication. On the other hand, all the symptoms may improve; the stupor becomes natural sleep; consciousness return; pulse and respiration become normal. This continues during the fourth week, but the patient recovers very slowly.

Relapses are of frequent occurrence. They occur about ten days after the the disappearance of the fever.

Hemorrhages are known by passage of blood from the bowels, nose or womb. The patient nears collapse and the temperature suddenly falls. Perforation is known usually by a sudden and intense pain in the abdomen, bloating (*tympanites*) and collapse. The patient lies on his back with knees drawn up. Peritonitis follows. The countenance is pale and wet with perspiration. The abdominal walls are motionless in respiration.

Complications are common, e. g. pneumonia, parotitis, pleurisy, and pulmonary gangrene. Various forms occur: e. g., Abortive typhoid, in which the symptoms are light, remission of temperature on the eighth to ninth day; walking or ambulatory typhoid, patient gets around, the symptoms are slight, but may suddenly terminate in perforation or hemorrhage.

Treatment of typhoid fever requires great care and careful nursing.

1. *Liquid diet* must be strictly enforced from the onset until from five to ten days after the fever has gone. Milk, meat broths, and soup are indicated. The best is milk with lime water in it to prevent coagulation of the milk in the stomach. Milk or beef tea should be given about every three hours. From two to four pints of milk may be given a day.

2. *Frequent sponging*, (night and morning) with tepid water with a little vinegar in it should be employed. Hands and face should be frequently washed. Sometimes cold baths are given every three hours. The water should be seventy-five to eighty-five degrees F. and the body immersed in it for a few minutes, the body being well rubbed afterward to prevent internal congestion.

3. Bed pan and urinal should be used from the first as the extra exertion of sitting up is a serious drain on the patient's strength. Patient should never be allowed to get up.

4. *Swab mouth* with a wash of equal parts of glycerine and water with lemon juice added.

5. *Diarrhoea* unless excessive, more than from three to five times daily, should not be interfered with.

In constipation use anema every day or second day.

6. Keep feet and hands warm by hot applications. In case of relapse and sudden fall, heat up well and quickly by hot applications.

7. Return to solid food very slowly. Not earlier than from five to ten days after the fever has left. In all treatment avoid carbo-hydrates, (starches, etc.)—such foods as are digested in the intestines. No fat, etc. The solid food may be egg, lightly boiled or poached; very soft boiled rice, curds, and whey. (There is always some one around to feed a patient boiled cabbage and pork.) Care should be taken as the patient always has a ravenous appetite, and there is great danger of over feeding.

8. Plenty of water—boiled—should be given. You may give toast water, barley water, etc.

The object of medical treatment is simply palliative. Hare declaring that the course of the disease cannot be shortened. However, Dr. Goltman of Memphis, Tenn., in the *Medical Record*, New York, September 17, 1898, states his belief to be that early and rigorous eliminative treatment may cause a shorter or milder course by lessening toxæmia. In medical treatment as in Osteopathic treatment, great reliance is placed upon proper nursing, but the former indicates a long list of drugs for the various phases of the disease.

Osteopathic treatment, if early and thorough, is highly successful, in most cases generally shortening the course, and in most of the remainder keeping down the fever and the untoward symptoms that consume the patient's vitality. Dr. Connor, of much experience, states that he can usually have the fever broken up within two weeks. Dr. McConnell states that by early and radical treatment the course may be shortened to five days or less.

Q. Would it not be injurious to take the patient out of bed to give him a bath?

A. Not necessarily so, as he could be lifted out and back.

Q. How soon would you reduce the fever?

A. As soon and as much as you can. Of course it does not stay down but we keep at it. We always make it a practice to keep it down as much as possible.

Q. How often do you treat a patient for typhoid fever?

A. You should go to see your patient two or three times a day and make it convenient to go several other times to see if he is getting along alright. You should give at least two treatments a day.

Treatment Procedure by Osteopathy: You will find your patient very nervous, muscles twitching, and perhaps irritable. You can reduce the nervousness and twitching by carefully relaxing the muscles along the spine. I have the patient turned on the side, with as little effort on his part as possible, and relax all of the muscles along the spine on both sides. I do not usually put him to the trouble of being turned over to the other side. I reach over myself to the muscles on the under side. You can in this way get the effect on both sides, and the next time you can have him turned on the other side: You will find by treatment along the spine and by gentle treatment in the neck you can usually quiet the patient. Treat in the neck at the superior cervical region. The idea is to get the hand flat against these muscles which are drawn and sore, and gently turn the head to one side so that you can relax the tension. That seems to relieve the tension and aid the blood flow. The spinal treatment and treatment in the neck are for these symptoms of nervousness. The theory is that we affect the posterior spinal nerves and get the effect through the terminal sensory fibres to the sympathetic nervous system, and out through them to the vaso-motor and thus equalize the circulation. I think that our theory here of work upon the superior cervical region is that we reach the sub and great occipital nerves and reach the general circulation through the medulla, in that way quieting the nerves. There are special points which are included between the second dorsal and and fourth lumbar. (a.) From the second to the seventh dorsal to relieve the lungs, as you know pneumonia is one of the complications. (b.) Work gently from the fifth to the tenth dorsal for the effect upon the jejunum. (c.) From the tenth dorsal to the first lumbar for the ilium. We do the most of our work from the tenth dorsal to the first lumbar because the small intestine is affected. You may work from the first to the fourth lumbar to affect the large intestine. (d.) From the sixth dorsal to the second lumbar to affect the kidneys. All your work along here must be very gentle. Work against the muscles gently, about as you see me doing here, particularly from the tenth dorsal down to the fourth lumbar. I work gently springing the spine, all the way along, gently toward me as that will stimulate and relieve the nerves. The spleen must be looked after in the splanchnic region from the eighth to the twelfth on the left side. The ribs from the eighth to the twelfth on the left side must be raised gently. I would not take up the arms of the patient. I would reach under him and raise in this way. Work

over the abdomen and under the ribs in front, not hard, as the spleen and liver are likely to be congested and you must not work hard on that account. In diarrhoea, where there are more than three or four stools in a day, we inhibit the ninth, tenth and eleventh dorsal, the eleventh especially; simply by holding against this point, the patient upon the side, and springing the spine. I go also to the lumbar region, and hold at the heads of the eleventh and twelfth ribs. The theory there is that springing the spine and gently raising the ribs releases any tension upon the spinal nerves, and through them affects the sympathetics, ruling the organs mentioned. Also treat gently the second dorsal and fifth lumbar to influence the superficial fascia and thus influence the general circulation of the blood; the cutaneous circulation.

Fever:—I take down the fever by work here in the superior cervical region as I have already shown you. I hold flat against the sub and great occipitals for a long time. Do not be in a hurry. You can hold there several minutes if you wish, and turn the head from side to side, gently. I also inhibit by springing the arm up a little; or by pressing in against the heads of the upper ribs on the left hand side, from the first to the fifth to help quiet the heart. In extreme cases where the heart beat is from one hundred and thirty to one hundred and forty, Dr. Hildreth says he has had fairly good success by raising the fifth rib on the left hand side. I would work under the angles behind and raise both the angle and the tip. Also you will need to lower the first rib gently by pressing in behind the clavicle.

The abdominal treatment is one that must be given very gently. We work gently in the iliac fossæ on each side. I kneed gently not with the idea of helping the constipation, but of getting in deep among the intestines and relaxing the tension upon the lower hypogastric and pelvic plexuses, simply by a gentle touch to relieve the tension in this way. Now this work over the liver and spleen seems to relieve the tension, takes out the soreness, and thus probably, prevents the degeneration spoken of in the spleen, by freeing the blood flow, as well as preventing ulceration in the bowel. Probably also there is degeneration of the involuntary muscles of the heart, and as soon as you can do so you should give a stimulating treatment to restore the vitality,

Suppose you have a hemorrhage? Osteopathic treatment there would be as far as possible to inhibit the peristalsis at the ninth, tenth and eleventh dorsal vertebræ. The best thing to do is to immediately place an ice bag over the caecum to contract the blood vessels and stop the hemorrhage, while on the other hand, if you have perforation of the bowels, which is sudden, and may be noticed by the fixation of the abdominal walls, etc., hot applications are used over the bowels and lower limbs, to relieve the pain. If perforation occurs you are almost sure to lose your patient.

The patient's room should be quiet and clean, with good ventilation, plenty of fresh air, diligent nursing and frequent Osteopathic treatment, but not enough to in any way worry the patient. Guard against relapses from over eating.

LECTURE V.

Malaria, called also *Marsh Miasm*, *Intermittent Fever*, *Fever and Ague*, is an endemic disease, dependent upon the presence, in the infected locality, of a specific poison generated by a Protozoon germ, *Plasmodium Malariae*, or *Haematozoon of Leveran*.

The term Malaria is commonly used in a general sense, to denote a class of intermittent and remittent fevers known as the Malarial fevers or diseases. This class of fevers is characterized by enlargement of the spleen and liver, paroxysmal periodicity, and the presence in the blood, either free or within the corpuscles, of various forms of the above mentioned parasite.

Ætiology:—The cause of this disease is peculiar, and not well understood. Although described by early writers as the "Bacillus" *Malariae*, it is now generally admitted to belong not to the class of bacteria, but to the class of protozoa. It is generated in swampy places as the name (marsh miasm) implies, though by no means there exclusively. It occurs chiefly in tropical climates, and in places where strong heat from the direct rays of the sun, moisture, and decaying vegetable matter are present. It is often met with in localities where the soil is rich in organic matter. When the natural drainage outlets of a locality become clogged, the ground becomes waterlogged, and malaria is very apt to be developed. Malaria is also known in some dry, arid regions. Large tracts of arable land, left without cultivation, frequently become malarious. Digging up of the soil, e. g. for the purpose of putting in an extensive sewer system, has long been known as a cause of an epidemic of the fever.

The fertile strips of soil at the bases of the mountain ranges in tropical countries are seats of the miasm, e. g. base of the Himalayas, where the soil, rich, well watered and covered with forest, is notably malarious. Certain rocks, disintegrating, exposed to sun and air in tropical countries, are said to be productive of the poison, e. g. granite rocks, which are highly absorbent of moisture. When you come to consider that the rocks are one of the best fertilizers known, then you have some idea how they may increase the value of the ground by fertilizing it.

Decaying vegetable matter in the bilge water of ships has been assigned as the cause of an outbreak of malaria.

Certain low lands along rivers, are known to be especially infected. Our Chariton river, it is said, is infested more on one side than on the other. Dr. Connor used to tell us in clinics that on the west side, I think it was, the people were very apt to be malarious while those on the east side were not.

New places, just under cultivation, and places with a damp subsoil, though the upper crust is dry, are very frequently affected.

Characteristics:—Malaria is described by Green as being strictly endemic, i. e. limited to certain localities. The disease must be contracted, here though it

may manifest itself elsewhere. This would seem most natural from the nature of the cause. However, *Epidemics* of malaria are common occurrences, while sporadic cases are known. Rane says it is not known why epidemics and sporadic cases should occur, as they have been known to occur, in localities which have never manifested malarial infections, in individuals who had not left the locality.

The disease is not contagious, it cannot be carried by one person to another. One person may be infected from another, says Green, only by direct intravenous inoculation.

The miasm seems to travel with air currents, and in certain definite plans. It may be stopped by a hedge or a wall, unless a strong breeze carries it over. It may be found only upon one side of a river, the other side being entirely free from it. A forest belt is often a barrier. Under proper conditions it may travel long distances upon air currents, provided the strength of the breeze be not sufficient to dispel the germs. They may rise with currents of heated air to considerable altitudes which are otherwise healthful. They have been known thus to ascend along ravines up mountains from five-hundred to three thousand feet in height. Thus it is sometimes unsafe to place a dwelling near the edge of a ravine.

The virulence of the miasm varies some with the temperature, localities which are unhealthful in Summer and Autumn becoming safe in the winter season.

There is a theory that the system of the host may become inoculated through the bite of insects, e. g. mosquitoes. However this theory though probable, is questioned.

The Germ: As stated above, the germ of this disease is not a bacterium, but a protozoon. It is always present in the blood, in malaria, either free in the serum, or within the red corpuscles. Its action upon the blood is marked, it being extremely destructive of the red corpuscles. Quain states that Prof. Keltch has shown that in twenty-four hours, a man affected with malaria lost more than a million globules per cubic millimeter. Thus the patient becomes anemic, and this state of the blood causes murmurs about the heart, which may lead to a mistaken diagnosis. The germ is seen in different forms at different times. The form free within the liquor sanguinis is minute, globular, and possessed of amoeboid movements. This seems to be the primary form. Again the germ is seen within the red blood corpuscles, amoeboid, pigmented. Again a large pigmented intracorpuseular form is seen; then an intracorpuseular rosette form, with the pigment aggregated at the center; or the flagellated form is seen free.

Some writers maintain that the above forms are different stages in the growth of the organism. It may, further, be crescentic in shape, or become flagellated, the flagellae lashing about in the liquor sanguinis.

It is stated that the severe types of malaria in tropical countries are particularly connected with the appearance of the crescent shaped germ, and that

in temperate climates the crescentic form is rarely present, the flagellated form being produced immediately from the intracorpuseular discs. Levan first discovered the germ.

Pathology and Symptomatology: The diagnosis of Malaria (typical) never fails on account of the clock-work-like periodicity of the phases of the disease. Hence the name paroxysmal. There are three stages; the chill, the fever, and sweat.

The chilly stage lasts from a few moments to three hours. The patient's appearance is marked. The features shrink; there is a chill, which may be violent; there may be vertigo, and nausea. The chill may be limited to a slight chilly sensation along the spine. Ordinarily the whole surface is cold, the face is pale; the nose becomes pinched; the breathing is shallow and quick; the pulse is small and rapid; but the internal temperature rises rapidly from two to seven degrees. Various symptoms attend this stage, such as headache, backache, cough, thirst, colic, etc.

The second stage lasts a variable number of hours; from two or three to ten or twelve. It comes on gradually, the body recovering from the chill, the temperature continuing to rise until it reaches a height varying from 100 degrees to 108 or even 109.40 degrees F. Various symptoms attend this stage.

The third stage also lasts a variable number of hours. In it the fever gives away to a profuse perspiration, greatly relieving the patient, the temperature declining to normal or near normal. This stage ends the paroxysm.

The patient now may feel quite well, the paroxysm not returning until the next day, in which case the type is called "quotidian," or the paroxysm is absent until the second day, ("tertian" type), or finally, until the third day, constituting the "quartan" type. Owing to this peculiarity the patient often feels quite well and wants to go to his usual occupation. After he is well there is a tendency to the return of the trouble on the fifth, seventh, ninth or fourteenth day. The stage between paroxysms is called the stage of *Apyrexia*. The fever is called intermittent on account of the intermission between paroxysms. If the stage follows in the order given, the fever is "*intermittens completa*;" if one stage is lacking, "*intermittens incompleta*," if in reverse order, "*intermittens inversa*." The most usual forms are said to be the quotidian and the tertian. The paroxysms, instead of occurring at regular intervals, may come each time earlier (anticipating), or later (postponing).

The fever is said to be *remittent*, when between the paroxysms the temperature is lessened, but the fever merely slackens, exacerbation recurs immediately. The intermittent fever may vary in form, being gastric or bilious, and attended with gastric derangement; typhoid, simulating that fever; or of a grave form leading to a rapid collapse. The symptoms of the latter form are great weakness; derangement of most of the organs; icterus; bleeding of nose, stomach or kidneys; dysentery, etc.

When the patient has resided long in a malarial region and has gotten the system full of the poison, a low state of vitality exists, with various symp-

toms characteristic of the malarial, but in mild form. This is called "*Malarial Cachexia*."

"Dumb Ague" is the name given to a variety of malaria, sometimes acute but usually chronic, in which the sequence of chill, fever and sweat does not occur. The symptoms are irregular chilly sensations, flushes, pains in joints and muscles, bronchial troubles, headache and neuralgia, etc.

Enlargement of the spleen (ague cake) and liver, with soreness of both, is a usual feature of all these forms, as well as a constant feature of the regular form. These both and the spinal cord become pigmented, probably through destruction of the red corpuscles. The urine is often irritating during the paroxysm.

Treatment:—Now as to medical treatment, quinine is the stock remedy, and is said to destroy the germ.

The Osteopath wants to get rid of the fever and of the poison. He stimulates as far as possible all of the avenues of excretion through the bowels, kidneys, liver and the lungs in the ways already indicated. It will not be necessary for me to indicate this to you, simple and general stimulation of the excretory system. I think you all know the points at which you work. The second dorsal to the seventh dorsal, and also the fascia at the second dorsal and fifth lumbar, in all stages generally treat this way. I also treat the liver in a way with which you are familiar, and the spleen. Work gently, as you must bear in mind that these two organs are very likely to be congested in any such cases as this, and you must not run the risk of rupturing them. For chill, relieve the internal congestion, and thus relieve the chill by stimulating the heart and by stimulating the superior cervical ganglion. Stimulate the lungs as well, by raising the ribs from the second to the seventh on both sides. Give also a thorough spinal treatment. Some have said to rub up the spine in order to stop the chill, but I do not see why that should be. If you stimulate the spine all the way along you thus restore the circulation. When you find the body chilly, warm the patient by hot applications to the spine, feet and in the axilla. Also give hot drinks and hot foot baths. Hare says the action of the poison at this stage of the chill has congested and engorged the thoracic and abdominal organs. Work especially upon the splanchnics and solar plexus in front, and work over the abdomen in front to get rid of the congestion about the abdominal viscera; and the stimulation about the lungs already described, would get rid of the congestion about the thoracic viscera.

As to the fever, you treat it as any other fever, cold sponging and cold drinks have been indicated by Hare. Besides that, Osteopathically slow the heart's action by inhibiting. You raise the arm and hold back on the shoulder in this way for a minute or a minute and a half, and this will slow the heart's action. Inhibit the superior cervical, the splanchnics, and the lower lumbar to equalize the circulation. In the stage of sweating you should let the patient alone, as the perspiration removes the poison, causing the patient to feel better. Give plenty of water to drink, and encourage the perspiration by wrapping up

warmly . Give hot foot baths, also stimulate the superior ganglia and lungs to help this improvement along. The constipation and diarrhoea you know how to treat, as before indicated. In the period of apyrexia, give a thorough general treatment for a tonic effect.

I might say our success is good in malaria if the case is taken in time, but if the disease has been coming on for some time it is more difficult to cure. Some two or three months ago a young man came to my house on Sunday with his face flushed, and the malaria symptoms very perceptible. I treated him that day and the next. He remained at home several days but he was out within a few days.

Where you have a malarial constitution it will probably take some time to work this poison out of the system. I have had cases where they would have chills once a week. You can stop the chills and relieve all the symptoms.

LECTURE VI.

The various forms of rheumatism are among the most frequent cases that the Osteopath is called upon to treat. The fact that most of these cases have become long standing chronic cases, makes the average case of rheumatism somewhat difficult to handle and slow to cure. Very serious cases of deformity resulting from the disease present themselves for treatment. Frequently parts are dislocated, e. g., hip, knee, lower jaw etc., simply in the progress of the disease. I have had several such cases. One case was of a man in this town who had been affected with rheumatism for some years, but one day he went up town, and while walking his hip became dislocated. It shows you the drawing power of contraction in disease. I have seen more than one case where the lower jaw had been dislocated from the same reason. Joints become enlarged by the growth of tissues; the synovial membranes are destroyed and chalky deposits are formed in the joints. One of the most frequent phenomena you will witness in connection with rheumatism, is the enlargement of the joints, for the reason that these cases, in the majority of instances, become chronic and this chalky deposit is formed. Consequently it becomes one of the main points in the diagnosis of rheumatism. Hence it is not strange that the Osteopath frequently finds himself confronted by cases, certain features of which are beyond his skill, while at best, they, as a whole, are slow and unsatisfactory. It is rare however, that the Osteopath cannot afford immediate relief from pain in any case of rheumatism, and, almost without exception, cases coming under his care are greatly benefited in most particulars. He can reset the dislocated joints, relax the rigid muscles, absorb to some extent the articular deposits, and give new freedom to stiffened joints. In almost any case of acute Rheumatism, whether muscular or articular, his success is practically assured, while in chronic cases he may usually obtain good results. Hence the success of Osteopathy as a treatment for all forms of Rheumatism is marked. The fact that so many cases are of years' standing, coupled with the fact that

the patient frequently cannot continue the treatment for a sufficient length of time to obtain the best results, makes the average of the cases coming under the treatment slow and difficult.

In the special forms of this disease, such as Lumbago, Torticollis, Pleurodynia, etc., the treatment is very successful.

There are several forms of Rheumatism, commonly met with: Acute Rheumatism, known also as Rheumatic fever and Acute Articular Rheumatism; Chronic Articular Rheumatism, and Muscular Rheumatism. These three forms of Rheumatism are separate forms. Chronic Articular Rheumatism does not necessarily follow the Acute or Rheumatic Fever, although the latter may develop into the former. Sometimes the person is attacked from the beginning with this so-called Chronic form of Articular Rheumatism. They seem to be distinct from each other, though the Articular forms, both acute and chronic are due to similar causes, and the latter often results from repeated attacks of the former. The muscular form is often complicated with the other forms.

Raue makes the following general statement regarding this disease. 1st "It attacks either the fibrous tissues, joints, aponeuroses, the sheaths of the tendons, the neurilemma, the periosteum, or the muscles and tendons. 2. It is a peculiar, painful affection, caused, no doubt, by inflammation and nutritive disturbances; and, 3. It comes on independently of other acute or chronic diseases, or traumatic causes, etc."

Rheumatic Fever, (Acute Articular Rheumatism) is an acute, febrile disease, a constitutional disturbance, characterized by fever, sweats, and inflammation of the joints and serous membrane of the body. The tendency it manifests of attacking any serous membrane makes it frequently a dangerous disease.

Aetiology:—As to the causes of the disease, they are two fold; predisposing and exciting. Among the former are heredity (27) per cent; previous attacks; occupation, such as hard out door labor under exposure to the weather; social position, poverty being a frequent cause; and residence in certain districts.

Among the exciting causes are infection, this being considered by some a disease caused by micrococci in the system; exposure to wet and cold; strains and muscular sprains; chills from overheating; derangement of the stomach and liver from the eating of rich food; mental effects, such as despondency and depression; exhaustion from sickness, lactation, uterine disease, etc.

Some authorities hold that there is accumulation of lactic acid in the system, acting as a poison to the tissues. Others hold that chilling of the surface of the body causes derangement of the parts of the central nervous system and vaso-motor disturbances, or pain, or trophic changes. In regard to the chilling of the surface of the body and this affecting the central nervous system, you see here it is given plainly in the aetiology of such a condition as rheumatism. We generally understand a cold to be a congestion, but it has been suggested that it may be due to a nervous disturbance from chill. If your feet are wet or exposed the result may be a cold in the head. It is clear in numerous respects, and I think the hypothesis of nerve causes is a very reasonable one

Some regard a chill as affecting nutrition, causing the retention of the lactic or other acid, which in turn affects the nervous system, causing affection of the joints. There is a germ theory, a specific organism being suspected; and a malarial theory, due to miasm or poison generated outside of the body. The general difference between the bacterial infection and the infection of miasm is that the bacteria get a foot-hold and propagate the poisons in the system as in typhoid fever, while on the other hand in malaria, the miasm is generated on the outside of the body, and the poison formed is taken into the system by the person visiting the locality infected by the poison.

All this goes to show that the nature of the disease is not well understood although a late writer says: "It is apparently becoming more and more recognized as a purely *infectious* disease." (Raue.)

Pathology:—Structural changes in the joints are sometimes very slight, following the inflammation of the synovial membrane; merely a slight exudation containing a few pus cells and but little fibrin is noted. There is *oedema* of cellular tissue about the affected joint, causing a visible swelling. One of the most frequent symptoms that you will note in cases of rheumatism whether of long standing or recent, is that the joints will swell. I am treating a case now in which the two fingers on the left hand will swell. Sometimes it will be in the hand, and sometimes about the various joints.

In severe inflammation of the synovial membrane, considerable pus and fibrin are present in the exudation, and the ends of the bones may become infiltrated. The heart and large blood vessels contain a large amount of fibrin; the cartilages of the joints probably suffer inflammatory changes, when there has been much fever, there is apt to be granular degeneration of the liver and other solid viscera. The inflammation frequently attacks the heart, or lungs, or pleura. It may attack the peritoneum, larynx, testes or renal tubules of the kidneys. There may be congestion of the lungs, pericarditis, myocarditis, or endocarditis. It is this tendency of Rheumatic fever to attack the heart especially, and the lungs, that renders it so often fatal. It is said that about twenty per cent of all cases are complicated with endocarditis; fourteen per cent with pericarditis, while myocarditis is quite rare. Pleuritis, pneumonia and meningitis are still less frequent.

Symptoms:—Three prominent and constant symptoms of Rheumatic fever are, fever, sweats and arthritis. The fever is variable, frequently, but often follows a tolerably regular course. It is present at the outset, and lasts as long as the disease preserves its acute character. Usually the temperature does not exceed the normal more than one or two degrees. It is usually moderate if the joint symptoms are so, but may rise to 104 or 104.90 degrees F. under an opposite condition of affairs. Sometimes the fever rises rapidly and becomes very high without respect to other symptoms. The fever is remittent in type, rising from one fourth to one degree in the evening. The sweats are acid, and the skin is often covered by a fine red or white ash. The perspiration is profuse, and of an acid odor, it varies in amount and is most profuse when the

pain is greatest. It is said that the odor is so strong and so characteristic that frequently the diagnosis can be made from that alone. The sweats are not weakening, but though unpleasant to the patient, afford him great relief.

The arthritis, or inflammation of the joints, is marked by swelling, redness, pain and heat. Pain in a joint marks the onset of the attack, it swells and reddens and the effect may spread from one joint to another, or remain localized at one joint. The joints of the spine and the symphysis pubes may be attacked, but the toes are rarely invaded. I had a case in which every joint of the body was attacked. The person was practically immovable. Every articulation of the spine, everything but the lower jaw was attacked by the arthritis. The kidneys were very bad, the arms were drawn at the elbows, and the knees were drawn up to a right angle. There was great pain, perspiration and on the whole it was very distressing. The lower jaw usually escapes, although I have seen several cases in which the lower jaw was attacked.

The pain is excruciating; much increased upon movement. It begins as a sore feeling and may become throbbing. It very gradually disappears, leaving a bruised feeling in the joint. The color of the swollen joint is red or pink, and feels warmer than the surrounding part.

The joints most affected are the knees, ankles, shoulders, wrists, and elbows, i. e., the larger joints.

Besides the fever, sweats and arthritis, there are various symptoms.

You will notice here a similarity between Rheumatic fever and other specific fevers. An attack comes on much in the manner of any acute specific fever. There is chilliness, malaise and general debility; sore throat, aching of limbs and trunk, flying pains in the joints are noted. The patient lies stretched upon his back, carefully arranged that every joint may be guarded; the complexion is sallow, and the cheeks flushed, Thirst, lack of appetite; frequent, weak pulse and slightly accelerated respiration are all present. The reaction of the urine is acid; it is scanty and high colored.

The joint symptoms are transient, usually, passing quickly from one joint to another, those sore one day being nearly well the next, while still others have been invaded. The tongue is coated with a moist white fur. The tongue is sometimes coated brown, or is dry and cracked. Dyspepsia and bowel disturbances occur. There may be diarrhoea or constipation.

The urine is scanty, high colored, strongly acid and contains a quantity of urates and uric acid, which are deposited as a thick sediment upon cooling. Delirium and stupor may arise, but are rare. Sleep is either prevented or much broken by the severe pain. The patient's mind is much disturbed over his condition, particularly if he has had previous attacks. I have a case of a little girl in which the disease began with a sore throat. Both arms and both limbs are affected, and the right hip has been drawn out by the disease. She has been affected this way for five or six years. In all respects the bodily health is excellent. The kidneys are in a healthy condition. The urine is frequently analyzed, and only in case of cold does the urine show a departure from the

normal. She is fat and has splendid general health. This shows what severe cases of specific disease may exist in which the general health will be good. This is something that I have wondered at, and something which I think you will notice.

Course, Duration and Terminations:—Children and old people are rarely attacked; the majority of cases occurring between the ages of fifteen and forty. Men are more liable to it than women, probably because they are more exposed to conditions of the climate. Robust persons are more frequently victims than are debilitated ones. The disease is more common in the spring and winter seasons, and is observed in all climates, though most frequently in temperate ones.

The course does not follow a regular cycle, but is variable. The attacks may pass off in ten or twelve days, or may worry the sufferer for many weeks, finally passing into a more or less chronic form.

Convalescence is as a rule tedious, may be accompanied by desquamation of the hands and feet, or of the body generally, and is frequently followed, if not by more severe sequelae, by pain and weakness in the neighboring joints. The remote effects of the disease frequently persist during the rest of the life, and are sometimes considered of more consequence than the original attack. Such are chronic *arthritis*; heart disease, especially valvular; disease of the lungs, brain, kidneys, or vascular system.

Complications:—Various complications arise in the course of the acute attack; rendering it more serious and more difficult to deal with. Organic heart disease is most common, fifty per cent being the estimate. It is said that children and youths seldom escape it. Its presence is more common in severe attacks, women seeming to be more subject to it than men. If the case is neglected, heart symptoms are more likely to appear.

Complications of diseases of the lungs are likely to occur, and are responsible for death in a large proportion of the fatal cases. Such are pneumonia, pleuro-pneumonia, pleurisy, bronchitis, and pulmonary bronchitis. Other complications are renal, serous inflammation, gout and scarlatina.

Diagnosis:—The diagnosis is usually made without difficulty, but is often rendered a matter of great difficulty by the tendency manifest, in the period of invasion, to resemble in its symptoms the acute specific fevers. The diagnosis rests upon the family history, the history of the attack, the pain and tenderness of the joints, the moving about of the joint symptoms from joint to joint, and the acid sweats.

Prognosis:—As regards death is good, only about four per cent of the cases being lost. But as regards succeeding health, it is described as most uncertain, owing to the variety of complications, and the uncertain course of the disease. Under Osteopathic practice the prognosis is good for Acute Articular Rheumatism. It runs a mild course in children and old persons. One must be guarded in prognosis in cases of patients who have cardiac or lung symptoms, or weakness.

LECTURE VII.

I wish to call your attention to a couple of points which Dr. Sheehan mentioned to me in regard to Acute Rheumatism, or Rheumatic Fever. That is, the higher the fever, and the more it shifts about from joint to joint, the more liable the fever is to go to the heart. There is greater danger then of it attacking the heart. The other one is that as long as the alkalinity of the urine is retained, the heart is not so liable to be attacked.

This is a painful inflammation of one or more joints, running a chronic course. Two forms are described by Raue; one in which some single joint remains chronically stiff and painful; the bones crepitate at the joint upon motion being made by the operator; the joint may be swollen, or the swelling may be lacking, or only apparent, through the atrophy of the surrounding muscles.

The second form is merely repeated attacks of rheumatism. The patient is very sensitive to changes in the weather, and can often foretell them by pains in his affected joints. This form is often complicated by rheumatic neuralgia or paralysis.

Aetiology:—The causes are mainly the same as for the acute form; heredity, exposure, mental depression, poverty and physical exhaustion. The disease attacks mostly persons in middle life or in advanced age.

Pathology:—The ligaments and synovial membranes are thickened, enlarging the joint; the bones have become spongiform at the cartilaginous ends, and the synovial fluid is turbid. Very commonly the joints are enlarged and deformed. There is hyperæmia and effusion in the tissues about the joint.

While the disease in many cases is the result of the acute form, it may attack one independently of previous illness. Quain states that in some instances, one member of a family is affected by the chronic form, while brothers and sisters suffer from acute rheumatism.

Symptoms:—The most marked symptom is pain and stiffness of certain joints, aggravated by bad weather, and becoming most severe at night. The affected joints are dry and stiff, and crepitate upon movement. Rubbing and exposure of the joint to cold atmosphere lessen the pain, but increase of warmth aggravate it.

This form of Rheumatism varies much with individuals, some are affected with stiffness and pain in some single joint. The joint does not seem to have undergone structural change, and the patient may have good general health, leading an active and vigorous life. Other cases present more severe symptoms. The pain in the joint is greater, anatomical changes have taken place in it, and it is red, painful and swollen. There are repeated attacks of sub-acute rheumatism.

Still other cases present more marked symptoms of pain, swelling, etc. The changes in the joint are marked, the attacks are so frequent that the patient is in almost constant pain. The joints are often ankylosed or dislocated.

This disease often leads to permanent disability, but deaths from the disease directly are rare.

Heart disease, as in the acute form, is a frequent complication. Dyspepsia, and the formation of calculi often occur.

The Prognosis under Osteopathic treatment is good. In all cases relief can be given and in a certain number, entire relief from the symptoms is obtained. Medical prognosis for cure is very unfavorable.

Muscular Rheumatism:—This form of Rheumatism differs considerably from the other forms described, on account of the different regions of the body in which it settles, attacking muscles, tendons, periosteum, neurilemma, fascia, and other fibrous structures, but never joints. It shows a tendency to attack certain groups of muscles, causing varieties of Rheumatism, to which specific names have been given, e. g. Lumbago, Pleurodynia, Cephalodynia, etc. It is frequently associated with other forms. This disease is characterized by pain and spasm in the part affected, and by some fever.

Aetiology:—A rheumatic diathesis is said to be the chief predisposing cause. It attacks one at any age, and of either sex. Exposure to cold, particularly to a draft upon a muscular part; strain of the muscles or ligaments, are the chief causes of an attack.

Raue describes the pain of an attack of muscular rheumatism as, "tearing, shooting, stitching, screwing, burning; sometimes aggravated and sometimes relieved by motion, rest, cold or warm application, etc." Little is known as to the pathology of the disease. Sometimes fibrous growths are formed in the muscles, and the peripheral nerves are grown together, but usually there is no change discoverable in the muscular structures. Swelling and redness may be present or lacking.

Symptoms:—Are slight fever, sore throat, pain in the muscles, which becomes severe and spasmodic. The patient assumes characteristic attitudes to give ease to the parts. The tongue is furred, appetite is poor, constipation is present, also general malaise. Most of these symptoms may be wanting in any given case.

This Rheumatism is not of long duration in many cases. It may disappear in a few days or weeks, or may remain as a chronic ailment, affecting the muscles of a particular part. It readily yields to Osteopathic treatment.

The chief varieties are *Rheumatic Torticollis* (stiff neck); affects the muscles, or the sterno-mastoid, drawing the head to one side, (wry neck.)

Lumbago:—Affecting chiefly elderly persons, coming on suddenly, the patient, stooping over, finds himself unable to rise. It affects the lumbo-dorsal fascia, the erectors spinae, and smaller lumbar muscles. I remember one case of this disease in particular. I was called early one morning to go see a lady who had been sitting upon a chair and bending over her trunk, and when she went to arise she could not get up. When I got there I first relaxed the muscles all along the lumbar region as best I could with her sitting upon the chair. She was put in bed and I soon got the muscles all loosened. She was soon all

right again, and was about that day, and I did not hear of her being troubled afterward, although I lived in that neighborhood for some time.

Cephalodynia:—Attacking the frontal, occipital, temporal muscle, the galea capitis, or periosteum of the skull.

Dorsodynia:—Of the muscles of the upper part of the back and shoulders.

Pleurodynia:—Of the fibro-muscular structures of the chest, causing pain in the side, cough, restrained respiratory movements, in pectoral and intercostal muscles.

Treatment:—Osteopathic treatment of Rheumatism must be persistent but not severe. There is danger in Acute Rheumatism of setting up fresh inflammation and driving the disease to the heart, if too severe treatments are given. Hence use *great care*. One should not treat too often or too long, especially at the beginning of treatment. Three times per week is sufficiently often. Length of treatment should vary from ten to fifteen minutes, according to the case.

Too frequent and prolonged treatments, as well as too severe handling are especially apt to irritate and do harm in Rheumatism, because of the soreness and pain that naturally accompany the complaint.

In any case of Rheumatism, the Osteopath must give especial attention to stimulation of the *kidneys*. He must also thoroughly treat the *liver* and *bowels*, stimulate lung action, and cutaneous circulation, all with a view of removing the acid from the system. The liver is said to be frequently enlarged in Rheumatism.

Dr. Harry Still always has good success in treating rheumatism, and his treatment upon the kidneys is invariably this already described to you as stimulation of the kidneys from the sixth dorsal to the second lumbar. Your work upon the liver and bowels is for the purpose of eradicating the poison from the system. You must also stimulate the twelfth dorsal and upper lumbar. You know how to stimulate the lungs from the second to the seventh dorsal on each side, also stimulate the second dorsal and fifth lumbar, centers for the superficial fascia. A general spinal treatment is given, and bathing and as much active exercise as the patient can take are good.

The treatment then for the liver, over the ribs from the eighth to the twelfth; kidneys, sixth dorsal to the second lumbar, also the twelfth dorsal and the upper lumbar; for the lungs, second to the seventh dorsal on each side, for the fascia, second dorsal and fifth lumbar; add to that, treatment to the superior cervical ganglion of the sympathetic, reaching the center for the medulla.

I have seen Dr. Harry Still take a case of Rheumatism and for the first work do nothing but stimulate the bowels, kidneys and liver, and he would not go any further. I have often wondered why he should give such short treatments, but he is very successful in treating Rheumatism. The treatments are new to the patient and this is all that he can stand. You must gradually extend your treatment to other parts of the body, since in the various forms of Rheumatism, the digestive and circulatory systems may be deranged, the heart and lungs, kidneys, and blood all undergo pathological alterations, and even

the brain may be affected. The Osteopath must keep close watch upon the condition, and by combining thorough general and spinal treatment with the specific measures he employs, keep the system and their special parts and organs well stimulated and sustained. He may thus prevent or repair these pathological changes, aborting the attack, or giving grateful relief.

In the articular forms, the object of treatment is to spread the joint and give free access of blood and nerve flow. There are particular ways. It is well to work the arm up and around. But it does not reach as well as a particular move, taking the arm of the patient in one hand I double the other hand and place it in the axilla. I then push the arm of the patient down close to the side; that springs the shoulder joint, allowing the articular nerves and vessels free action. If it be in the spine, this movement of traction that I have shown frequently is good or with the patient sitting with the hips held down, while you reach down and lift at various points along the spine, thus spreading. For the knee and ankle, you can have some one hold under the shoulder while you pull, in this way, while spreading the joints of the knee and ankle. Another way that I have for treating the knee is to place the foot of the patient between my knees and to work in the popliteal space, holding the knee in this way and spreading the hamstring muscles. Another very good way is to have the patient sitting upon a chair, place your knee under that of the patient so that his popliteal space rests upon your knee and you can spread the joint by pushing the leg downward. As to the wrist and fingers, you can by holding the forearm in one hand, spread the wrist joint and the fingers by traction. At the elbow I have the forearm semi-flexed upon the arm and that releases the olecranon process and you can spread the joint by traction at the bent elbow. This motion will apply, I think, to all of the joints of the body, so that you will have no difficulty. When there is motion in the joint and the synovial membrane is not destroyed, the chances of restoring it are good. You cannot tell from the outside how much of the joint has been destroyed. You can only tell by general symptoms, by the amount of motion and the amount of pain, judging from these that the synovial membrane has not been destroyed. Then you have a great deal better success than if the membrane has been destroyed. Spreading, as I have said, renews blood and nerve supply and absorbs deposits, but it will take many months. You must have the patients treating for month after month. A great many people do not have the patience, even if they possess the means, to continue the treatment long enough to get the results. If people possessed the patience to continue the treatment a sufficient length of time, we could do so much more good than we can under other conditions.

In Acute Rheumatism great care must be taken in spreading, on account of the pain. The same is true to a considerable extent in the chronic forms. You must gradually accustom the patient to the treatment so that he can stand a great deal more.

In Muscular Rheumatism, the treatment must be directed to stretching

and thoroughly kneading the affected muscle, tendon or joint. I lay special stress upon stretching the muscles. If you have, say the biceps muscles of the arm affected, I would adopt some such motion as this: push the arm out straight and back, the idea being to increase the distance between the bony attachments so as to stretch the muscles. Get the best way to stretch and elongate the muscle itself. Owing to the elasticity of the muscles they may be stretched, allowing free flow of blood through them. You can also knead some, and you can prescribe baths. A salt rub is good. Massage treatment will not be a bad thing with the idea of loosening up the blood flow, taking away the congested condition; but we do not depend much upon this massage, the principal treatment being to knead the muscles and to stretch them. I believe there is a theory that the specific poison is retained in the diseased part, so that by throwing more blood to the part and by stimulating that region it helps to carry away and throw off the poison.

The Osteopath must always trace the nerve supply of the affected parts and look for lesion to the nerve or centers. In sciatic rheumatism, in rheumatism of the arms, I have found distant lesions along the spine. Within the last month, as I remember it now, I have had four different cases in which there was rheumatism in one or both arms, and in each one of these cases I have found some slip of the vertebræ in the upper part of the dorsal region, this being the region that seemed to be most involved, while in the sciatica and in the lumbago you will often find slips or lesions along the spine. You will find that it is a part of our system, this finding of special lesions, as I understand it, though perhaps not entirely. When you find such lesions, although you may not be able to directly connect them with the disease, you must be able to trace indirectly in this way.

In lumbago there is a direct lesion to the nerves of the lower spinal muscles. I have found that the best way to treat this is with the patient sitting upon a chair. This is the same treatment that I have shown for other things, that is for stretching the joints of the spine. I work here particularly along the lumbar region, lifting and turning as I go, with the idea of loosening these muscles and correcting any slip which may have occurred.

Besides the points already mentioned, heat and rest are valuable adjuncts to the Osteopathic treatment.

Acute:—In the fevered stage of Rheumatism, the cold baths, cold pack, and sponging with tepid water are beneficial.

The patient should be placed in bed between blankets, which absorb perspiration and prevent the chill of damp linen. Rest for the affected joint is supplied by wrapping it in cotton, wool or other soft, warm material. Warm fomentations give relief when applied to the joint. As far as possible we move the joint, especially in the chronic forms. The joint is placed at rest entirely in this acute form but if it is kept there too long it may become ankylosed. If you keep up motion to the greatest extent possible you will be able to get better results. I have not known of a case which was followed out by Osteopathic

treatment where the joint was left stiff. It is a matter of judgment as to how far to work the joint.

In chronic forms warm clothing and housing, protection, from climate, relief from toil and muscular exertion, turkish baths, warm or hot fomentations applied to the joints, followed by vigorous rubbing are valuable aids in Osteopathic treatment.

In muscular rheumatism the same general plan of treatment may be followed.

It should be borne in mind that these various adjuncts may not be necessary except in severe and stubborn cases. If the simple Osteopathic treatment is sufficient you will not need to be bothered with these other things.

LECTURE VIII.

Influenza, Catarrh and Colds:—These three maladies are somewhat similar in pathology. They frequently are presented to the Osteopath for treatment, and such treatment is, as a rule, in the highest degree successful.

The treatment for influenza, and for the condition commonly known as cold are almost identical, while that for catarrh is as far as it goes, similar. Hence these subjects may be conveniently considered in the same lecture. The fact that all may depend upon the same agency for their production, at least to some extent, namely exposure, and the fact that in all the main pathological facts are the congestion of the blood in certain parts of the body, the tightening of the muscles and ligaments, and the aberation of nerve function consequent to these conditions, make them especially interesting to the Osteopath, and especially amenable to his treatment.

Influenza, commonly known as LaGrippe, called also, Catarrhal Fever and Epidemic Catarrh, is described as an acute, infectious, epidemic disease, marked by febrile symptoms, and usually complicated with other serious affections, being followed by sequelæ that are frequently distressing and severe in a marked degree, such as progressive muscular atrophy, various forms of paralysis and spinal trouble, etc. There is one patient here at present suffering from Locomotor Ataxia and progressive muscular atrophy. He tells me that he had four or five different attacks of influenza. I think that his disease may have developed from these repeated attacks of influenza with the attending nervous symptoms, leading to these serious results. It is not at all surprising that such serious results should follow, when you come to consider that these nervous disturbances reach far enough to alter the state of nerve centers to a very marked degree.

As a rule this distressing malady occurs epidemically on a grand scale, though it may also occur endemically, and occasionally, sporadically. Usually vast areas, such as whole countries, are successively invaded by the epidemic. Epidemics are recorded as early as 1729.

Its manifestations are varied, different epidemics seeming to possess differ-

ent marked characteristics, but three different general forms have been described:

(1) Simple, without serious complications. (Catarrhal.) This form attacks particularly the membranes of the respiratory Tract.

(2) Thoracic, involving the thoracic viscera, and complicated with such affections as pneumonia, bronchitis, etc.

(3) Abdominal or Gastro-Intestinal, affecting the digestive organs. I will mention one fact here, lest I forget it when speaking of colds. I have known people to have a severe attack of intestinal cramping, accompanied with constipation or diarrhœa and severe colic—symptoms arise from what I believe to be taking cold in the abdomen. They in some way get the abdomen exposed perhaps by a change of clothing, which would cause the cold to settle in the abdomen without necessarily being felt elsewhere. This, I think, will be a valuable suggestion to you, although I have not read it in books but have heard others speak of it.

(4) To these has been fittingly added, the Neural or Cerebral type, attacking the nervous system, often simulating the clinical course of Typhoid fever, as does sometimes the Intestinal type.

It is stated that these various types may all be seen in the same family in which several members may be suffering.

Clinical Features:—The onset is, as a rule, very sudden. The patient may note the first symptoms upon rising from bed in the morning, upon rising after sitting, or when about his daily tasks, having a few moments previously felt entirely well. It usually manifests itself first by a chill, followed by a fever, loss of appetite, headache, lassitude, aching and soreness of the back, limbs, and muscles, profound mental and physical depression, catarrhal inflammation of the nasal mucous membrane, etc. This malady may affect persons of any age, sex, or occupation. Pulse slow; constipation; temperature irregular to high; urine scanty and high colored or profuse and light colored.

Catarrhal Type:—Dryness of the nostrils, sore throat, sneezing, watering of the eyes, difficulty of swallowing and of breathing and pains in the eyeballs are present. These symptoms may remit during the day, increasing at night. The tongue is moist and coated with a creamy fur, the pulse is frequent. (80-100) Diarrhœa is often a symptom, as well as inflammation of the ear.

Thoracic Type:—In this form, in addition to the usual symptoms, are seen pneumonia, bronchitis, pleuritis, quinzy, and infiltration of the lung. All the prominent symptoms are concerned with the thoracic viscera. A peculiarity of the Bronchitis is the general inflated condition of the lung, which, instead of collapsing upon opening the thoracic cavity, protrudes from the aperture.

Gastro-Intestinal Type:—Soreness of the abdomen, biliousness, nausea, vomiting, sometimes jaundice, diarrhœa, etc., are prominent symptoms, in addition to the general symptoms named above.

Cerebral Type: The nervous symptoms predominate. Headache, delirium, tinnitus aurium, muscular twitching and hyperæsthesia are all noted.

Influenza is of variable duration in length of time of the attack. It may disappear in forty-eight hours, or it may remain acute for several weeks. Often it subsides into a semi-chronic state, and keeps the sufferer miserable for months. It seems to attack the weak points in the system, and to develop latent morbid processes already present. It is not usually of itself fatal, but causes death in a fair average of cases through some complication or sequel. The Bronchitis of Influenza seems to be the most fatal.

A serious feature of this disease is the sequelæ in leaves. The mental or physical depression often persist after the acute attack, hypochondria, tuberculosis and paralysis frequently supervene. The poison left in the system has, according to Gowers, a peculiar liability to affect the nervous system. Hence the nervous sequelæ, both from their nature and frequency, are the most marked of the after effects. Mental dullness, melancholia, and delirium; the general paralysis of the insane; hysteria, cataleptoid and epileptic seizures; neuritis and affections of nerve centers, are all among nervous sequelæ of Influenza noted by Gowers.

Aetiology:—Little is known definitely concerning the cause of this disease. Some writers have suggested an atmospheric influence, as well as the effect of bad drainage and poor sanitation, as being the cause. It seems probable that the true aetiological factor is a microbe discovered by Pfeiffer, Kitasato and Canon in 1892.

Catarrh:—Catarrh, Coryza, or cold in the head, is an inflammation of the nasal mucous membranes, with increased secretions from them.

The term Catarrh is used in a general sense in describing the inflammation of any mucous membrane in the body. Thus there is Catarrh of the stomach, Intestinal Catarrh, Catarrh of the bladder, etc. The term Coryza is usually employed to designate Catarrh of the nasal membranes.

Symptoms and Aetiology:—Catarrh is brought on by exposure, by too sudden cooling of the body when heated, or by sudden lowering of the temperature. It occurs sporadically, sometimes epidemically and one attack predisposes to another. It is sometimes caused by inhalation of irritating gases, such as chlorine, etc. It is stated by Raue that epidemics seem to depend upon a peculiar unknown condition of the atmosphere, probably deficiency or superabundance of ozone. You will also find frequently that the contraction of muscles has drawn the vertebræ out of place. This, frequently has been found to be the case by our practitioners, and there does not seem to be any reason for doubting that the vertebræ may be drawn out of place, as queer as it may seem, by contraction of the muscles. I have had cases of trouble in the neck where the vertebræ, one or more, was displaced. It is often the second or third. I have often found when I had replaced a vertebra that the effect of a cold was to draw it out. I will say that such may not be the case except in cases where there has been a previous accident, causing a displacement of the vertebra, but I am convinced from my observation that a vertebra may be drawn out by overdue contraction of a muscle. And from the standpoint of

Osteopathy this disease may be caused by some faulty condition in the anatomy of the neck, contractions of the deep muscles, or displacement of cervical vertebrae, usually of the second or third, which interferes with blood and nerve supply of the nasal mucous membrane by shutting down upon the jugular veins, thus preventing venous return, or by affecting nerves controlling the blood flow, thus disarranging it. These conditions either weaken the membranes and leave them susceptible to the influence of the ordinary aetiological factors, or they cause a congested and inflamed condition of these parts, attended with the increased secretions characteristic of catarrh.

The Symptoms are chilliness, headache, indisposition, sneezing, dryness of the nose and throat, etc.

The inflammation extends into the frontal sinuses, into the antrums of Highmore through the nasal duct to the lachrymal sac, causing conjunctivitis; or into the Eustachian tubes, affecting the ears. The inflammation may also extend from the mucous membrane into the skin of the nose, or down into the bronchi, causing lung troubles.

The catarrh is described as serous, mucous, or muco-purulent according to the nature of the secretion. The first secretion is thin and watery, the second is thick, a copious discharge of mucous; the third is composed largely of leucocytes, and partakes of the nature of pus.

This latter discharge may, in chronic cases, decompose in the nasal cavities or in the sinuses and become extremely offensive.

Colds:—A cold, regarded by some writers as a nervous disturbance, is usually considered as a congestion of the blood in the vessels in some part or parts of the body, brought on by exposure in some form. Coryza is a cold in the head.

Aetiology:—Cooled surface of the body and closed pores, drives the blood inward; increases the work of the lungs, and causes it to congest at weak spots; exposure to the cold or damp, e. g. getting the feet wet, sudden cooling of the body when heated; sitting or standing in a draft; living in overheated quarters; sleeping under too heavy covers, and wearing of too warm clothing, thus causing the body to become tender, are among the usual causes of catching cold. I have known people who were foolish enough to suppose that by keeping in doors all the winter they would be free from colds and it is almost invariably the case that they will have a cold much of the time. They stay in warm rooms and sleep under too warm covering and the body becomes tender. Coming suddenly from very cold temperature into very warm, as from out doors into a super-heated room, will give a person a cold as quickly as to go from a heated room out into the cold. The system is not always able to accommodate itself to such sudden changes of temperature.

Symptoms are similar to those noted in Catarrh, namely: chilly sensations, discharge from the nasal mucous membranes, headache, light hemorrhage from the nose, soreness and stiffness of the muscles, etc.

One attack predisposes to another. The patient frequently falls into a

semi-chronic condition, continually taking more cold and seldom being without one. This is likely to happen on account of the deranged circulation, the patient frequently breaking out into a perspiration with slight exertion, this being followed by further chilling and fresh symptoms of a cold. A cold, if severe, may have severe complications; pneumonia, bronchitis, influenza, etc.

Treatment, (heat);—The drinking of hot lemonade, hot foot baths especially upon retiring, or wrapping up well in a dry blanket to produce copious perspiration are usually enough to reduce a cold at first. It is said that if a cold is treated this way vigorously within twenty-four hours you can reduce it. These things should be used at night, and additional clothing should be put on next day as the system is weakened from perspiration, and care should be taken not to take more cold. Some would prescribe dry heat instead of moist. Heating of the feet before a fire is a good thing and does not open the pores in the way that hot water does, so if it is in day time when you cannot take the care you would like, this application of dry heat is perhaps a good remedy at first.

Influenza:—I give the patient a thorough spinal treatment. I had a case of cold to treat this morning and I gave the same treatment that I give for influenza. With the patient upon the face thoroughly loosen all the muscles and thoroughly stimulate the whole spine. The theory you already know. If I could not work enough with the patient upon his face I would turn him over and thoroughly stimulate the lungs, kidneys, liver and fascia in such a way as to work off the effects of the disease. That, in cold or influenza, is the particular Osteopathic treatment. For the lungs the second to the seventh dorsal vertebra; kidneys, lower splanchnics; liver, at the abdomen, from the eighth to the twelfth ribs on the right side, raising the ribs, working in the right and left iliac fossae to reach the hypogastric plexuses and deep over the solar plexus. Guard against the possible settling of a cold or influenza at these points, also attend to the fascia at the second dorsal and fifth lumbar. That is, include these points in your spinal treatment.

Should the influenza have settled in the abdomen, give a thorough abdominal treatment, embodying the points already given. I would also give an *enema* in such a case to relieve the bowels of fresh congestion. I would treat the spine especially from the middle dorsal down, and all these plexuses of nerves through the center to the abdomen.

For Cerebral Influenza I would look particularly for any condition of contraction of the muscles along the spine. I first look for any contractures of the muscles in the neck. It seems to me from my experience there is always a contraction of the muscles of the neck although the cold may be elsewhere. It may be settled in the chest or some other part of the body but there will almost always be a contraction of the muscles of the neck. I do not know that I ever found a cold where there was not this marked condition of contraction of the muscles. See whether or not there be any displacement of the vertebrae; the contraction of the muscles is very apt to bring on such a condition. In my

experience in order to find out whether or not there is displacement of a vertebra, I stand behind the head and turn it from side to side, getting in deep to find if there be any displaced vertebra. In several cases where I knew there was trouble in the neck, I could not tell by standing at the side where the vertebra was out. When you are working on a patient in bed as you may be sometime, bear this in mind, to get the patient in such a position that you can go to the top of the head. Of course when there are these cerebral symptoms, and the trouble is especially in the head you must treat the spine, equalizing the circulation, and sending the blood elsewhere.

In Catarrh as well as in cold we would first thoroughly loosen the muscles about the neck, especially about the sides and back of the neck, also the styloid and hyoid muscles. Take the muscles which are attached to the styloid process and thoroughly relax them. A good treatment for catarrh is to hold under the lower jaw and have the patient spring the mouth wide open, you rub the muscles well on each side and thoroughly relax them. Stand at the side and press in deeply at the styloid process with the idea of loosening up these muscles and freeing the flow of blood through the carotid artery. Dr. Harry Still uses this treatment in almost every case, (and sometimes almost exclusively) of catarrh and troubles with the eyes and ears. He will have the patient open his mouth five or six times, and he assists the patient all he can by opening his own mouth at the same time. Now particularly in catarrh you will find the second and third vertebrae are apt to be deviated to one side or the other. Of course we treat here at the upper part of the neck, and reach the superior cervical ganglion, thus influencing, through the sympathetic plexus, the different parts of the brain, and through these nerves the sub and great occipitals, thus reaching the medulla which you know contains the vaso-motor center, thus influence the general circulation of the body. It is important to work down along the spine to get the stimulating effect and the distribution of the blood flow. Also treat all these points of the fifth nerve, at the supra-orbital, the infra orbital and the mental foramina. Have the patient open the mouth wide, push the finger into the glenoid fossa, and have the patient close his mouth, that will have the effect of loosening the ligaments, and, it is claimed, affects the fifth nerve. We also reach the fifth nerve through its connections sympathetically by working upon the sub and great occipital nerves. I also in addition to this always thrust my finger behind the clavicles, thus raising the clavicles and stimulating the flow of blood in that way. Another treatment is to have the patient lie upon his back, and with the mouth open, I place the finger against the hard palate and work from side to side, in this way, back along the soft palate, uvulva and pillars of the fauces.

I am treating a case at present in which the tonsils are chronically enlarged and the uvulva is over one half an inch in length. These internal treatments reach that condition much better than any treatments I have been able to give. In this connection, you will often have a patient with a little hacking cough, most frequent in children; if you will look into the throat you will find

that the condition of the soft palate is causing just enough irritation to keep up this little cough. By this internal treatment and treatment in the neck you will be able to stop the cough. I have another case which is rather peculiar, in which the mucous membrane of the throat is congested. There is an irritation of the throat which is dry and scales off in great dry flakes, sometimes blood mixed in it. It is peculiar in being so dry. I have treated a case in the way indicated to you, especially the styloid and hyoid muscles, quite hard. It will not hurt usually to work hard, but that you can determine by the condition of your patient. I thoroughly relaxed in this way, and the lady who before had to have water by her bed at night and frequently during the day, is very much better. Also in a cold we treat the sides of the nose, working from the lachrymal duct down. It seems to stimulate the nerves here and the flow of blood, freeing the membrane very well. We can free very nicely by working down the nose in this way. This is on the same principle that our mothers used to grease our noses with goose grease. For a stoppage of the nostrils and difficulty in breathing here is a motion that we employ with very good success. It is best to have a pillow. Lay the palm of the hand flat, press down hard at the frontal region, and you can bring a great deal of pressure in this way. I do not know what the nerve connection is, but a great many cases of nostril stoppage will be relieved in this way. Of course, work all about the eyes and loosen all about the face to relieve the congested condition.

Now I might explain to you my particular method of *treating a cold*. I have him lie upon the back, and I raise all the ribs and stimulate the lungs very briskly, on either side from the second to the seventh dorsal. I am working from the middle dorsal above, as low as the twelfth dorsal, successively, having my hands against the angles of the ribs, and raising them as I go very briskly and very energetically. This is a great stimulation of the lungs as well as of the circulation throughout the body. I then bend the arm, this will stretch the muscles over the chest and raise the upper ribs, then I raise these upper ribs by pushing the arm up and working under the clavicle.

I frequently have been able, by this treatment, to relieve heavy colds in one treatment. If you can always do that you will be very fortunate. Of course I give a brisk and thorough treatment to the neck as well, and sometimes it is the best thing you can do for the patient to thoroughly loosen the neck.

If in any of these troubles there is a development of any special symptoms of course you must attend to these symptoms at once.

Q. Do you think it is necessary to remove the tonsils?

A. It is often done. I do not think it is necessary if we get the case in time. As to whether it is ever necessary, I presume it is. Sometimes they grow again and sometimes they do not.

Q. Do you give the same treatment for dry catarrh that you do for moist catarrh?

A. Yes sir.

Q. What would you do in case of croup. Could you give immediate relief?

A. I should work the neck through. I have been able by that treatment to give immediate relief. I would work all about the throat and neck. The trouble in giving treatment for croup is that it is generally found in little children who object to such treatment.

Q. Would you use salt water?

A. Yes, sir, that is very good.

Q. What would you do in membranous croup?

A. You must be very careful in cases of membranous croup. Cause the patient to throw up. Thrust the finger down the throat and get the membrane in that way. If the membrane is far it will take very prompt action. Thoroughly treat about the throat to keep the circulation free and prevent the forming of the membrane.

Q. In catarrh of the throat would you give internal treatments?

A. Yes, sir, it is well to treat inside.

Q. How often would you treat catarrh?

A. I would treat it three times a week. That will be sufficient.

Q. Would you treat internally that often?

A. No, sir, I would not treat internally oftener than once a week, or once in ten days, unless in severe cases.

In regard to colds, I have had cases where the cold was chronic and the condition of the system was weakened, in which I got good results by directing the patient to take a cold bath every morning. The brisk rubbing stimulates the circulation; not only does it stimulate the circulation, but it has a good effect on the nervous system, stimulating and strengthening the pores of the skin so that they can more readily open and close and accommodate themselves to the changes in temperature.

LECTURE IX.

CONSTIPATION.

Constipation is defined as "infrequent or incomplete alvine evacuation, leading to retention of feces."—Quain.

With this, one of the most annoying, as well one of the most frequent ills to which mankind is heir, Osteopathy has had most unqualified success. The ordinary sluggishness of the bowels that affects so many people is speedily relieved, ordinary constipation yields almost as readily, while some very marked and obstinate cases of years standing have been cured. I have known of a lady about thirty-five years of age constipated from birth, having never had a natural bowel action, to be entirely cured in six month's treatment. I have been told by one of our students who went out practicing in the summer, that he had a case of a lady older than that, a lady eighty years of age who had never had a natural action of

the bowels, whose case yielded to Osteopathic treatment. There are others as remarkable. Osteopathy seldom fails to cure constipation arising from the usual causes. Paralysis of the bowels, as seen in some cases of spinal disease, and in general paralysis, can be handled successfully only in such cases as will yield in regard to the general paralytic symptoms.

In the matter of bowel evacuation, each individual's habit is a law unto himself. Some people are not well without two motions daily, others in perfect health, go as long as three days. Raue states that he has known women in perfect health to have but one evacuation per week. As a rule, one evacuation per diem is necessary to health. But it must be borne in mind that the daily evacuation is not conclusive evidence of non-retention of fecal matter. The quantity of the motion may be insufficient. Cases have been noted in which the walls and sacculi of the colon were impacted with old remnants, while a regular daily stool, normal in consistence and color, was made, passing thus through a channel whose walls were formed of old and hardened fecal masses. You will find in the retention of the fecal matter that there is an irritation of the bowel wall and a catarrhal condition arising from this irritation, hence it is that quite often there is an alternate constipated and diarrhoeal condition. The patient will have constipation for awhile and diarrhoea for awhile. Dr. Herry Still tells us that he has found in his experience that if the liver is exceedingly tender, and he asks the question, "Are you not alternately troubled with constipation and a diarrhoea condition?" the answer is usually yes.

Symptoms:—The head is dull and the brain lacks vigor, there may be headache, dizziness, palpitation of the heart, etc. There is often too free secretion of saliva; the appetite is increased or lessened. There is frequent biliousness, pain in the bowels and upon defecation, coldness of the extremities, backache, pains in the lower limbs, etc. The memory is poor, the head confused, the complexion sallow, and the breath bad. On the other hand, people with rosy complexions and every appearance of health may be chronic sufferers. Constipation is a symptom in a great number of diseases.

Aetiology:—General and Local:

General:—The causes of constipation are exceedingly numerous and varied. Too concentrated a diet, e. g. milk, by leaving too little residue to act as an irritant to the bowel wall, stimulating it to action, becomes a cause. The same is true of too rich foods. Laziness, late hours in bed, and neglect of the regular hour are all causes. I have a patient who will be constipated every time she oversleeps, and remains long in bed, simply because she has gone past the regular hour. I think this is a cause with men in business who do not take time to attend to the regular calls of nature. This is one of the most serious causes of the most obstinate cases of constipation you will meet.

In hereditary cases, the factors are weak bowel muscles and nerve supply. Robinson instances a case in which he says he was satisfied that the plexus of nerves, the inferior mesenteric ganglion was not sufficiently developed, and he went to work by proper exercises, horse back riding, etc., to develop the gang-

lion. The child had inherited weak bowel walls and a weak ganglion. Weakened muscles result from anemia, etc. Loss of the fluids of the body, as in lactation, profuse sweating, and after diarrhoea, in diabetes mellitus, etc., may frequently be causes. You must have a normal amount of fluid in the system. I have found cases in which a certain amount of water had to be prescribed daily in order for the patient to drink enough. Often the physician has to prescribe some sort of table water to get enough fluid into the system. Often I prescribe water to be taken in the morning before breakfast, not at breakfast but fifteen minutes or a half hour before.

The use of foods leaving coarse, dry residue, e. g., corn and beans; the use of strong purgative medicines, etc., and any cause lessening peristaltic action of the bowels may cause constipation. People frequently take a tea spoon full of salt in the morning, washing it down with a cup of water. It will do all right for awhile, but it will dry the bowel, and the powerful action of the salt exhausts the blood vessels supplying the bowel, so always discourage the use of salt by a patient.

The styptic quality of the tannin contained in tea acts as a constipator by lessening their secretions. Lessen, or change in the quality of the bowel secretions and the secretions of the liver and pancreas, cause constipation by robbing the bowel of the stimulus gained from the action of these fluids upon the nerve terminals.

Too great muscular activity, nervousness, excessive mental application, are all aetiological factors.

Among the *local* causes may be mentioned mechanical agents, e. g., a displaced coccyx, a tightened sphincter ani muscle, pressure of a pelvic tumor, or of a gravid or misplaced uterus, impactions of the colon, stricture from peritoneal adhesion or hernia; mechanical stoppage by the presence of foreign bodies like grape seeds, fruit stones, etc. When you have peritoneal adhesion you may have a serious case, because that may progress enough to stop the bowel entirely.

Osteopathic Theory:—Mechanical causes aside, the Osteopathic theory in regard to constipation is that some lesion to the spine prevents proper action of the innervation or of the blood flow of the bowel, leaving it weak and ready to yield to any of the above mentioned general causes of constipation. Auerbach's plexus, ruling bowel motion, and Meissner's plexus, ruling bowel secretion are intimately connected with the sympathetics of the abdomen. These sympathetics may be hindered in action by some spinal obstruction of a nature and in a manner previously designed. Thus either secretion, or motion, or both, may be affected and constipation result. Or, since the blood flow is under control of the sympathetics, the lesion may readily affect it and cause the trouble. Hare (Practical Therapeutics p. 489) says "experiments have shown that the circulation of the blood through the intestines greatly influence peristalsis, and disorders in the blood supply readily bring on intestinal disorder." He also says that "peristalsis is almost entirely a reflex action, depending for

its existence upon the integrity of the nervous plexuses in the intestinal walls, namely those of Auerbach and Meissner." Hence effects upon these plexuses by lesion of their sympathetic connections might be of such a nature as to result in constipation.

It is evident that lesion to the spine anywhere in the splanchnic area, fifth to the twelfth dorsal, or below, might be the cause of constipation, but Osteopathic practice has designated certain important points in the spine at which lesion is likely to be followed by constipation. Such are the second lumbar, fourth and fifth lumbar and fifth sacral. The latter point is significant because the fifth sacral nerve controls the sphincter ani muscle, and lesion of it may so affect the nerve as to cause undue contraction of the sphincter, and thus act as a mechanical cause of constipation.

Lesions of the splanchnics or solar plexus, affecting the liver and the pancreas and their secretions, also become a cause of constipation.

Byron Robinson has lately written (Medical Brief) very clearly upon constipation as a neurosis of the fecal reservoir, as he calls the left half of the transverse colon, the descending colon and the sigmoid flexure. He makes a very interesting point there, that the small intestine and large intestine, (the ascending half of the transverse part) are subject to a quicker rhythmic action from their innervation than is the remaining part of the bowel, which is described as the fecal reservoir.

This portion of the colon is under control of the inferior mesenteric ganglion situated upon the inferior mesenteric artery, and sending its branches to the intestines. Muscular atrophy of the bowel walls must be referred to the nerves, since they control the lumen of the blood vessels.

The abdominal brain may be abnormally small in some persons, be under developed and thus allow of insufficient bowel action.

Neurasthenia, also deficient blood supply to the parenchymal ganglia of Auerbach's and Meissner's plexuses are frequent causes of constipation. In these cases of neurasthenia which you will meet, you will of course usually find constipation as a factor, and you will become able to recognize and ask at once if the patient has constipation. Simple observation is a great thing to put you on the right track.

- The movements of the intestines largely depend, he says, upon the amount of fresh blood sent to these ganglia. Peristalsis, so far from being impaired in constipation, may be increased, but be in vain.

A checked blood flow, or a lack of blood, as in anemia, becomes a cause.

An empty bowel is a still one, a full bowel an active one.

The irritation which increases peristalsis may also narrow the lumen of the blood vessels, lessen secretions and cause constipation.

In enteroptosis the weakened ligamentous portions of the omenta elongate and allow the organs, including the intestines and stomach to sink downward from their natural positions. This weakness of the ligaments begins from loss of tone in the abdominal sympathetics and you must as Osteopaths, as a rule,

refer that to lesions along the spine. I think I have thoroughly explained that before. By the gravitation of the organs downward, the nerve plexuses and fibres are stretched and still further weakened. The enteroptosis allows of kinking of the colon, especially at the splenic and hepatic flexures, and becomes thus a mechanical cause of constipation. It also interferes with the blood and nerve supply to the intestines, hinders muscular action, lessens secretion and absorption and thus becomes a prolific source of constipation and of other ills.

Osteopathy also looks upon constipation as a "neurosis of the fecal reservoir." It recognizes the importance of free blood supply to the muscles of the intestines that they may not atrophy, also of free supply of blood to the parenchymal ganglia situated within the walls of the intestines, that they may thus be stimulated to normal action. By affecting the sympathetic connections, by adjusting all abnormalities that may interfere with blood and nerve flow, Osteopathy preserves the integrity of bowel action.

It looks upon the weakness of the sympathetics that allows of enteroptosis and of its concomitant ills, as due to some spinal lesion which either directly or indirectly affects and weakens sympathetic life. I make that broad statement, of course I know as well as any one else that you do not always find spinal lesions in constipation, but in general that is the explanation we give and in general that is correct. You may have torpid liver which may in itself be a cause for constipation.

Excepting cases of constipation caused by mechanical agents, the system would not be subject to the operation of the general causes assigned for constipation, were spinal life perfectly adjusted and maintained.

Treatment:—It is divided into (a) upon the the spine; (b) upon the abdomen; (d) upon the coccyx and local, and (e) adjuvants.

A. The purpose of the former is to remove any lesion that may be interfering with sympathetic life or cerebro-spinal nerve life of the bowel. You may have, of course, as you understand, some irritation along the spine which interferes with nerve life, so that when I examine in case of constipation I always look for a lesion. You may find affected in constipation the splanchnic area and the region below as far down as the sacral. All of these lesions I described in treating the spine. It may be a contracted muscle, a slip of a vertebra, something which alters the curves of the spine, or any one of these lesions described. It may occur along the spine, so make examination in the areas mentioned. I come to the second lumbar and I often do not find it out of place. I believe I have already shown you the treatment for the second lumbar. Make the second lumbar a fixed point, counting up from the sacrum below, then make it the fixed point by placing the thumb and doubled finger against it and push up against the thigh; then take the other hand at the same place and make a fixed point at the second lumbar while you raise the upper part of the body and work it around this fixed point, thus effectually loosening any contracture of the ligaments.

The third and fourth lumbar are particularly significant to us, and the fifth lumbar as well, since lesions there may affect the hypogastric plexus and we work there especially to affect the lower hypogastric and pelvic plexuses. Do not forget to attend to the splanchnic area and all of the sympathetic connections here with all of the nerve mechanism of the bowel. You know between the eighth and ninth dorsal is the center given for the liver, so I always work along that region in constipation. I never stop my treatment for constipation without raising the eighth to twelfth ribs on the right side and usually it is after I have treated the liver, so with the patient on his back, I reach across, grasping the right arm of the patient with my right hand, and then raise and work up and back to raise the ribs.

Why do we work upon the liver? Because we wish to keep the flow of blood free. It seems that the bile is one of the best lubricants for the intestines and has a great deal to do with the normal stimulation. At the fifth sacral desensitize if you have any reason for supposing the sphincter ani is affected. Of course you determine this by a digital examination. Note the first to fourth lumbar for the large intestines. Peristalsis particularly at the ninth, tenth and eleventh dorsal, either by raising the lower ribs or by springing the spine and strengthening that region in the ordinary way.

B. The treatment over the abdomen. I work at the solar plexus in constipation. It is closely associated with the bowel at a point about midway between the umbilicus and the ensiform appendix; by deep pressure in this region you can usually, by going slowly, bring considerable pressure upon that point. In people with bowel trouble, and in dyspeptics you will usually find it quite tender here. Do not be rough, but you can push in deeply and stimulate these centers. Thus you reach important connections not only with the intestines but also with the liver. Also reach the hypogastric and pelvic plexuses by working along the third, fourth and fifth lumbar, and by working through the abdomen in front.

Also, there is a mechanical work that we can do along the line of the colon. Usually it is best to begin at the left in the region of the sigmoid flexure and work up to the ribs, then across above the umbilicus to the corresponding region on the right, and on down to the right iliac fossa. You work along the line of the colon and get such mechanical effect, but as I said before, that is not the only effect we get, we stimulate the bowel walls, stimulating Auerbach's and Meissner's plexuses in the bowel wall, thus reaching the nerve supply, and not so largely through mechanical action. Also, it is important to straighten the bowel and keep it free. We reach in deeply at the iliac fossa and straighten out the sigmoid, work up against the course of the bowel and tend to straighten it. You can sometimes obtain good results in swelling of the lower limbs by reaching in here deeply and raising the intestines, thus relieving the blood vessels. Now I always work upon the liver, that of course is one of the important points in constipation. Have the patient with the knees flexed and lying evenly disposed upon the table. Taking the left hand, I reach under the

edge of the right ribs against the edge of the liver. You must be careful not to bruise the liver. You can also get a squeezing motion upon the liver by reaching in below the right side and working on top of the ribs in front, and thus quite effectually pressing the liver. Then we work along the course of the bile duct. This is upon the right as you know, curved in the shape of a reversed S, so we work back along the S with the idea of freeing up. Sometimes in catarrhal conditions you will have a mucous plug formed and the duct stopped.

Also I stimulate the inferior Mesenteric ganglion by working the bowel a little below and to the left of the umbilicus. This is important, since as we see, this ganglion controls the part of the colon described as the fecal reservoir.

C. The treatment in the neck. Hare says, "The vagus nerve when stimulated directly or reflexly increase peristalsis." Always in constipation we stimulate the pneumogastric thereby increasing the peristalsis, in two ways, one by working along the sterno-mastoid muscle and the other working upon the superior cervical ganglion which we reach at the sub-occipital fossa.

D. *Local*:—Adjust the coccyx if displaced. Sometimes external manipulation is sufficient, sometimes, and usually, internal manipulation must be employed in the manner already described, but always in case of constipation see that the coccyx is perfectly disposed that it may not act as a mechanical impediment to the passage of fecal matter. A further local treatment is dilatation of the rectum, relaxing the sphincter muscle. This treatment is applied simply by insertion of the index finger and by a spreading motion. It should not be given oftener than once a week, once in ten days or two weeks. This rectal dilatation is a great stimulation to the sympathetic system and not only for normal bowel action, but it is frequently resorted to stimulate the lungs. In case of a patient sinking under anesthesia, one of the quickest and simplest ways to restore the patient is by rectal dilatation.

E. *Adjuvants*:—Remember that I simply give these to you as aids to your Osteopathic work, they are not osteopathy. If they were more frequently employed, fewer would suffer from this complaint. The use of water is of great benefit. The drinking of cold or warm water fifteen or twenty minutes or half an hour before breakfast is often sufficient to cause a full evacuation. It should not be taken with the breakfast as it does no good then. The theory is explained that when the stomach is empty a portion of the water, at least, is not absorbed directly from the stomach as water ordinarily is, but passes on into the small intestines and is there absorbed by the lacteals and carried into the portal circulation and greatly stimulates the flow of bile. Often a good drink of water upon retiring will accomplish the same purpose. We frequently use anemas of hot or cold water. It is said that a small anema of cold water is a great stimulation, though anemas are usually given of water; as hot as can be well borne. It should be given by a fountain syringe, the patient lying upon the back or

upon the right side, having the syringe hung at a height of six feet to insure a sufficient fall. About a pint should be given and the patient should immediately void this. The operation is repeated, this time giving one quart, three pints or even more of water stimulate gently by working the abdomen, in order that the water may be taken up into the bowel. The patient should now retain this as long as possible in order that the fecal matter may be well softened. Many make a mistake in voiding the water before it has been held sufficient time to act as a solvent of the fecal masses which may have been quite hard. When he has held it as long as possible; usually that will not be but a few minutes, he should void it, and ordinarily the result will be satisfactory. Sometimes your patient will not be able to pass the water, but if retained it does nothing but good, as it is acting continually as a solvent and will probably within a few hours, lead to a profuse action, but if it does not it is readily absorbed and carried out through the kidneys and bladder. Drinking of carbonated and sulphur waters usually develops some good conditions. Usually in sulphur water there is magnesium which has an aperient action. Graham bread contains salts which stimulate the normal action of the bowels also the roughness of the remnants of the bran is of itself a good stimulation of the bowel walls. Cracked wheat, oatmeal, vegetables, whole wheat bread, etc., are all alike valuable foods. Now remember that one may take too great quantities of these foods and become constipated.

Again fruits are a great help. I will mention first such as are constipating and should be avoided, such as strawberries, blackberries and raspberries. Raspberry juice is frequently given in case of diarrhoea, where you readily note its constipating effect. But such fruits as apples, grapes (no seeds), stewed prunes, figs, dates, and juicy fruits, especially before breakfast, or the first thing at breakfast, are laxative. These are all valuable, apples perhaps the most so, though different people are affected differently. It would seem, however, that apples, prunes and dates are to be given the preference.

Regular habits should be encouraged. Defecation is found to be largely a matter of habit, acquired generations back and passed on from generation to generation. A certain hour should be fixed for the stool and the patient at least go and try to produce evacuation, never however straining as that may produce hemorrhoids, but by thus fixing the habit and placing the mind on the desired end, you control the cerebral centers.

Aside from the regular habit of going to stool, certain exercises are beneficial; remember first however that violent muscular exercise is given as one of the causes of constipation, and have your patient carefully avoid fatigue in exercise. The following exercises are recommended:

First the stooping motion, the patient bending the knees, keeping the back straight, stooping down and raising, bring a pressing motion or squeezing motion upon the liver. He may, in bending downward, bend forward

until the shoulders touch the knees. The same effect is accomplished by the patient getting down on all fours and running about the room. This simply seems to be a natural way of massaging the liver. The patient may, when he awakens in the morning, while lying upon the back, tap and massage the abdomen gently and thoroughly and thus stimulate the blood and nerve force of the bowel and gain the desired end.

Horse back riding and ordinary enjoyable exercises are all very good.

LECTURE X.

DIARRHOEA AND DYSENTERY.

The success of Osteopathic treatment in both Diarrhœa and Dysentery is marked. As a rule the copious evacuation of acute Diarrhœa is checked immediately upon the first treatment, though frequently cases need more than one treatment, and sometimes become obstinate and chronic, requiring months.

Dysentery, although a more serious condition, being essentially an inflammation of the bowels, yields readily to our treatment. The treatment is similar in both cases.

Both of these conditions will illustrate, in their treatment, two points in Osteopathic theory: First, the condition of the spine as a predisposition to disease; second, the remarkable control gained over visceral life by manipulation of the controlling nerves.

Diarrhoea is regarded by some writers as a symptom merely of intestinal derangement, by others as a distinct disease. The word means 'to run through' and as Hare observes is loosely applied to all states of intestinal disturbance accompanied by liquid stools,

Actiology:—Hare notes four varieties of Diarrhœa: 1. Catarrh of the intestines, leading to profuse secretion and passage of mucous. Irritation set up by old fecal matter may be enough to set up inflammation resulting in a discharge so that you may have alternation of diarrhœa and constipation. 2. Lack of proper innervation of the blood vessels allows of an outpouring of liquid from them into the intestines. Right here you want to guard against an error frequently made by some who treat Diarrhœa as if it were caused solely by too rapid peristalsis. They make the same mistake as is made in considering constipation always to be a lack of peristalsis. It should be considered simply as one of the classes. 3. Improper condition of the glands leads to improper preparation of the digestive fluids, and, 4. Ulceration causes irritation and bloody purging.

Byron Robinson notes the fact that Diarrhœa may start as congestion, leading to oedema, rapid exudation, and Diarrhœa. Thus, catching cold frequently effects the bowels in this way, particularly in young children. He further points out that increased peristalsis may be accompanied by too profuse

secretion and exudation, but that on the other hand, increased peristalsis may be accompanied by narrowing of the calibre of the blood vessels and lessened secretion. Thus the irritation that causes the increased vermicular motion may cause constipation instead of diarrhoea. Such causes as influence intestinal peristalsis are important to the Osteopath as he finds in spinal abnormalities the frequent cause of nervous irritation leading to Diarrhoea or to constipation.

The processes of secretion and absorption normally balancing each other, may, says Robinson, become disarranged through the irritation of the bowel segments, e. g., by cathartic medicines. Owing to the increased peristalsis, not enough time is allowed for absorption of the secretions, and they are hurried through the bowel in the form of liquid stools.

Displacement of spinal parts, etc., may be the cause of such irritation, as our practice frequently shows.

The same author shows that catarrh of the intestinal mucous membrane may so affect intestinal secretions in quantity and character as to alternately cause Diarrhoea and Constipation.

Dr. Harry Still says that in cases where he finds the liver extremely tender usually finds diarrhoea and constipation alternating.

Causes of Diarrhoea are predisposing and exciting.

Predisposing causes are heredity; personal idiosyncrasy; time of life, e. g., teething and the climacteric; and, from the Osteopathic point of view, spinal conditions, any obstruction or irritation of blood or nerve life of the intestines.

Exciting Causes are:—(Quain.)

1. Direct irritation, as by poorly digested food upon the intestinal walls; entozoa; excessive bile, or retained fecal matter.
2. Bad hygiene, as living in damp, badly lighted and poorly ventilated quarters.
3. Exposure, wet feet, sudden atmospheric change, etc.
4. Nervous causes, e. g. depression, worry, shock, grief, reflex irritation in dentition.
5. Altered peristalsis and secretions.
6. General diseases; e. g. of the heart, liver, lungs, pyaemia, peritonitis, obstruction of the portal vein, measles, scarlatina, typhoid, etc. (Symptomatic Diarrhoea.)

Osteopathic Theory:—While admitting the potency of varied agencies to cause Diarrhoea, the Osteopath believes that most cases can be accounted for, either remotely or directly, by some abnormal condition of some part of the spine, particularly of the splanchnic area and of the lower region of the spine. A spinal lesion of any nature, may be of such a character as to influence the nervous mechanism controlling the whole of the intestinal life and the result may be violent and rapid peristalsis; vaso dilatation of the mesenteric vessels, followed by increased exudations, abnormal glandular activity, producing per-

verted or needless secretions of intestinal juices; or inflammation and catarrhal affection of the mucous membranes, as pointed out above.

As a predisposing cause, bad spinal condition stands pre-eminent. If the exciting cause be error in diet, exposure, undue nervous excitement, unhygienic surroundings, or a general disease, it may still be true that the bad spinal condition allows of a weakness of such a nature as to be readily developed into Diarrhoea by any one of these causes acting in conjunction therewith.

Granted that in certain cases, e. g., when Diarrhoea is purely symptomatic, no such remote causes can be found in the spine, primarily, yet because treatment at the proper spinal position will overcome the symptom, the theory still holds good so far as to direct the operator to the origin of nerves governing the part affected, while contracted muscles, caused secondarily by irritation sent outward from the bowel through nerve connections to them, frequently indicate to us the proper point of treatment upon the spine.

Dysentery, (Bloody Flux.)—This is a febrile disease characterized by intestinal inflammation, the passage of blood, mucous, etc., and great prostration. It occurs epidemically or sporadically, and attacks males and females of all ages.

Aetiology:—The causes of Dysentery seem to operate most freely in tropical climates, in damp or swampy localities. It is said to generally occur in regions which are prone to malarial infection, and that malaria seems to predispose to it by abdominal congestion, engorgement of the liver and spleen, and digestive derangement. Hence it is to some extent a constitutional disease. It is seen in greatest virulence in army camps and hospitals, where it best manifests its epidemic character.

Sporadic cases are usually caused by some indiscretion in diet, by sudden chilling of the body, wet feet, etc. Impure drinking water, bad air, undigested particles of food, and sudden changes in temperature which cause internal congestions, are all assigned as causes.

It is stated that Virchow considers the epidemic form to be of a diphtheritic nature and the sporadic form of a catarrhal nature.

The epidemic form is held by some to be contagious, but this is a mooted question.

Pathology:—This is a disease of the large intestine, but may extend beyond the ilio-caecal valve into the small intestine. The first change is a reddening and swelling of the mucous membrane which peels off and is passed in the stools.

Ulceration may attack and destroy the solitary glands, spreading thence to the tubular glands. From these ulcerations perforation of the bowel may occur. The ilio-caecal valve is sometimes destroyed when the dysentery is gangreous, and invagination follows. Ordinarily the whole surface of the mucous membrane becomes colored with a dirty, varicolored slime, mixed with epithelial, blood and pus cells, and causing very offensive stools. Sometimes the mucous membrane decays, is sloughed off and passed.

Inflammation extends to the peritoneum and involves the mesenteric glands. It is said that the ulcerated tissue is probably never restored, and that occasionally serious contractions of the gut, or stricture, may follow the healing of the ulcers.

Symptoms:—Are at first general constitutional and digestive disturbances, chilliness, malaise, fever in the evening, dry skin, constipation or relaxation of the bowels, anxious expression, occasionally retention of urine, and offensive stools are among the symptoms.

The tongue is furred; there is a thirst and bad taste, evacuation is accompanied with great pain followed by tenesmus, a bearing down feeling of the rectum; tormina or griping, is usually present.

The stool is characteristic; described by Raue as being first liquid, with transparent, jelly-like clots of slime, like boiled sago. This matter is tinged with blood, contains little or no fecal matter, and later becomes thin, dirty white and watery. The stool may become clear blood. The decaying membranes and ulcers give it a particularly offensive odor. Twenty, thirty or more stools are had in twenty-four hours.

The attack is likely to prove fatal, and we must guard against such unfavorable symptoms as hemorrhage, cold skin, great prostration, livid and blue countenance, collapsed abdominal walls, peritonitis, pneumonia, erysipelas, bed sore and hepatic ulcer.

Osteopathic Theory:—Some spinal lesions, especially at the splanchnic area or at the third and fourth lumbar, disarranges blood and nerve supply to the intestines, thus acting as a predisposing cause, rendering the system more susceptible to the influence of poor diet, climatic change or contagion.

Treatment: Look for lesion along the splanchnics, and see that the coccyx is straight. There seems to be a special significance attached to the 11th and 12th dorsal. These seem to be centers particularly for peristalsis, or lesions of the 11th and 12th ribs may influence these centers. The treatment for Diarrhoea is very simple. I place the patient upon the side and work along the lumbar region, springing the spine strongly. I do not hesitate to make it strong. Place the knees of the patient against you and give a very strong treatment. If the patient is a small man sometimes you can raise him off the table, and that will not be too strong a treatment. Of course you will have to gauge your treatment according to the condition of the patient. I work that way all along from the lower lumbar up as high as to the 6th dorsal. I hold for a minute or two then I turn the patient over onto the other side and repeat the operation. It is of course necessary to turn them over. Some operators think that by treating just on the right side they get good results. I think it is simply a matter of desensitizing the spine—inhibiting the nerves. Of course that sounds like the theory entirely of peristalsis, but you rule the vaso motor action there and you get effect upon the liver, spleen and solar plexus.

With the patient upon the back I raise the 11th and 12th ribs, or with the patient upon his side I work in at the point of the 11th and 12th ribs. Put-

ting the thumb against the angle you can hold there strongly, with the idea of inhibiting nerve action.

I never hesitate to have a good flow of bile to the intestines in case of Diarrhœa. The theory is that we work on the bile to stimulate its flow to the bowel, and you will find that it will act to allay irritation. I work on the course of the bile duct to insure a freedom of the flow of bile to the intestines. It will never do any harm in the case of diarrhœa or dysentery, as well as in case of constipation. This then is the general treatment in cases of diarrhœa and dysentery and similar troubles. Now of course, if it is a severe case of dysentery, when you work upon the abdomen you must be careful not to run any risk of perforation, which is likely to occur. I work over the bowel as in typhoid fever, simply to relax the tissues and free the flow of fluid, reaching the hypogastric plexus. In chronic cases where there is inflammation of the bowel, you will find the bowel contracted, and then by working gently but deeply over the site of the contracture you can relax. I am treating a case now of long standing. It seems to be chronic. There is a contraction of the bowel on one side or on the other. It may be on the right or may be on the left, varying from time to time. I work on the centers along the spine. I spent considerable time one morning in giving the treatment in trying to relax this condition. I worked from the middle dorsal down, but none of it seemed to do as much good as to get directly at the seat of the contracture by working in the abdomen. You may say that tends more to massage than to Osteopathy. That is true so far as that case is concerned, but differs in having the origin of the trouble in the spine.

We work first upon the *spine*, second upon the *abdomen*; we also work upon the *neck* to stimulate the pneumogastric. Stimulation of the pneumogastric will increase the peristalsis, according to Hare. You bring pressure upon these nerves by working along the Mastoid muscle. You must make local examination and satisfy yourself that the coccyx is straight. Sometimes it is displaced and is the cause of the trouble.

In case of rectal troubles you must, of course, treat the sacral nerves as they have to do with the rectum.

Also there are certain adjuvants which we may use. Quiet and rest in bed in severe cases, with proper care as to diet; meat broths, tepid (not hot) water, as hot water or hot liquid food will excite peristalsis. Use milk with lime water, also mucilaginous drinks such as white of egg in water, milk, rice or barley water. Avoid fruits, except such as are constipating, e. g., blackberries and strawberries. Tea is an astringent. Strong tea and toast may be given.

Ladies and gentlemen, this is not Osteopathy. It is simply common sense adjuvant methods that are used. One should not include these in Osteopathic treatment unless necessary. Ordinary cases of diarrhœa you will be able to stop with the treatment.

As to Dysentery, the same general treatment given above will apply

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You must however give a more general spinal treatment, especially for the liver, spleen, stomach and intestine. Dr. McConnel has said that there is invariably a lesion at the 3d and 4th lumbar in case of dysentery. Get the liver active. Frequently you can relieve portal congestion and do away with danger in that direction.

In Tormina I sometimes bring deep pressure over the solar plexus but usually work upon the splanchnics. I have the patient upon the side upon a chair, and spring all along. This is the ordinary griping in the intestines.

For the bearing down feeling in the rectum, strong stimulation in the sacral region will be sufficient. Sometimes it is necessary to give an enema, and then tepid water should be used. A mustard plaster may be good to relieve, but it should not be left on over twenty minutes, not long enough to blister. I have before mentioned that the patient should not be allowed to drink a quantity of liquid at once. Just a few spoonfuls of water should be given at a time to relieve thirst.

Question.—In treating the Pneumogastric do you inhibit or stimulate?

Answer.—The general way is to hold strongly against the Mastoid muscle. We do not depend simply upon the pneumogastric in these troubles. I have not found that I could do so.

Question.—How often do you give treatments for diarrhœa?

Answer.—I treat such cases several times a day. It is owing to the nature of the case. If it is an acute case you must keep after it. Treat three or four or a half dozen times a day; will do no hurt.

Question.—Would it do to give cracked ice instead of water to quench thirst?

Answer.—Yes, that would do in small quantities.

LECTURE XI.

THE HISTORY OF MEDICINE.

The Science of Medicine is defined as "the theory of diseases and of remedies," (Encyc. Britt.) thus broadly including all systems and manners of regarding and of treating diseases. It has existed, though not always as a science, since the dawn of civilization; schools of medical thought have risen, flourished and decayed, some leaving valuable contributions to the common fund of knowledge, while others have left but an empty name or the remembrance of a grotesque theory. The mission of Medicine in the world has been, ostensibly, the alleviation of human suffering, and the prolongation of human life, but of medicine, in the sense of the application of drug remedies, truly may it be said that it is more like David than like Saul, since it has slain its tens of thousands.

The progress of Medicine through the centuries has ever been upward; vast numbers of facts have been carefully recorded; quantities of books have been written; through diligent study and research the physician has become

the most learned of men, and is fitly described by one of his own number as knowing almost everything except how to cure disease.

The growth and evident success of a doctrine of Medicine within recent years, whose practitioners administer doses of drugs so highly attenuated that it is declared that by no analysis can any trace of the original drug be recognized, and one of whose practitioners, remarks the Encyc. Britt., claims to have discovered decided results from olfaction, or the smelling of medicines, but more especially by means of medicines contained in closed vessels held in the hand" leaves open to serious doubt the use of any drug remedy in disease. Many physicians believe of medicine what Prof. Magendie says of it, "Science indeed! It is nothing like Science," while the turning of the multitude for relief to such transparent frauds as Faith Cure and Christian Science, or to the more sensible methods, such as Massage, Rest Cure, Hydrotherapy and Physical Culture, is indicative of the popular turning away from drug remedies.

The old theory of disease was that disease was an entity, an idea originating in the observation of technically described new growths, e. g. cancers. Disease, having produced such departures from the normal, and having resulted in that which was without its counterpart in the healthy body, was held to have acquired an "automy," or peculiar independence, hence was an entity or a thing apart.

Another class of diseases, not marked by such abnormalities, were known as physiological diseases, e. g. inflammations, rheumatism. Disease came to be regarded as a condition, which condition, or its essential nature is, in any given case, revealed to the physician of to day by a study of the cellular pathology of the case. Hence the theory of disease is based, through a knowledge of Pathology, upon Physiology, and "a rational system of medicine," says Brunton, depends first of all upon a knowledge of the nature of the disease, or pathology. It depends, secondly, upon a knowledge of the action of the remedies that are to be employed in the disease, or pharmacology; and the knowledge of these two subjects depends upon a knowledge of the healthy structure of the body, or "Physiology." This definition the Osteopath may accept, having substituted for the word "pharmacology," the word "therapeutics.

Whereas the physician halts often in contemplation of the cellular pathology, assigning for such condition various causes, external or internal; the Osteopath, regarding cellular pathology as secondary, attends to the mechanical regulation of all parts of of the body related to the affected part. He often finds the sole cause in disarrangement of the mechanism, or he may find causes external or internal, as does the physician. In the latter case there may yet be mechanical causes responsible for a weakening of the tissues and the invasion by the disease. If no derangement of structure is found, as is sometimes the case, the Osteopath devotes his efforts to controlling the condition of the system by manipulation of nerve supplies, e. g. in a germ disease.

Brunton divides drugs into two kinds, (1) Protoplasmic poisons, which de-

stroy all kinds of protoplasm, (2) Drugs which seem to have more or less affinity for variously differentiated protoplasms. Thus drugs act always upon the protoplasm, which is the physical basis of life. The Osteopath secures the integrity of this protoplasm by controlling the quality or the flow of blood.

The History of Medicine begins with early Greek civilization, though it is pointed out that savages and animals instinctively resort to such remedies as rest, herbs, abstinence from food, etc. For a long period of time preceding the Greek period, Medicine existed, not as a science, but as a crude mass of knowledge, much obscured by myth and fable. To what extent the false encumbered the true, and superstition throve upon ignorance, may be imagined when one remembers to what degree superstition still rules the popular mind, especially in matters of healing, e. g., charming away of warts, etc.

In connection with Joseph in Egypt, about 1700 B. C., the Scriptures mention physicians and embalmers, thus implying some knowledge of anatomy and of the healing art. The position of the physicians then was less honorable than now, as indicated by the fact that the superstitious Egyptians would sometimes stone the embalmers after their work was done.

The study of Anatomy probably began with the embalmers, who removed the brain through the nasal fossae, and the intestines through an opening in the left side of the abdomen. Pliny states that the Egyptian Ptolemies allowed investigation of the bodies of the dead for the causes of disease, thus noting the origin of pathological study.

Other ancient peoples had a knowledge of hygiene and medicines. The Hebrews under Moses enjoyed some of the best directions concerning care of health. In the Pentateuch, ascribed to Moses as author, rules of health, such as avoidance of the flesh of the hog, circumcision, purification, relation of man and wife, public hygiene, and prevention of the spread of leprosy, are pointed out by Park.

Among the ancient Indian races we again note the fact that the healing art was in the hands of the priests, since the Brahmins alone were allowed to practice medicine. Their views are well illustrated in the following quotation: "They held the human body to consist of 100,000 parts, of which 17,000 were vessels, each one of which was composed of seven tubes, giving passage to the ten species of gasses, which by their conflicts engendered a number of diseases. They placed the origin of the pulse in a reservoir located behind the umbilicus. This was four fingers long by two wide and divided into 12000 canals, distributed to all parts of the body." Astrology, demonology, the flight of birds and a casual observation of the patient's condition aided in the prognosis. Some idle circumstance was of greater importance than the symptoms of the disease.

The unchangeable Chinese date their system of medicine at 2687 B. C., and ascribe it to one of their emperors. This work is still their authoritative text. They examine the pulse, noting three kinds, supreme (celestial) middle, and inferior (terrestrial) and used lotions, plasters, baths etc., but had practically no knowledge of surgery or anatomy.

The ancient Greeks were probably the wisest in medicine, and left to the world valuable knowledge as a foundation of science. With them mythology had its place in medicine. Hermes or Opollo, was the author of medical works, and Aesculapius was worshipped as the God of Medicine. This man, it is stated, is quite separate from the early practice of medicine, he was not a practitioner but the deity of medicine, though one writer mentions him as being desired by Castor and Pollux to become the surgeon of the Argonautic Expedition.

Among the Greeks the healing art was at its highest state of perfection. Here again the priests succeeded in monopolizing the healing art, no one being allowed to practice unless he became a priest. It is a notable fact that among all peoples the art of healing has been closely associated in the popular mind with that of healing the soul.

Bleeding still occasionally, though very rarely, practiced, is first ascribed to Podalirius, reputed to be the son of Aesculapius, who endowed him with the gift of "recognizing what was not visible to the eye, and tending what could not be healed." Thus is first indicated a classification of diseases into external and internal which is always taken as meaning surgery and medicine. Among the Greeks first arose the habit of recording cases, they being first written upon the walls of the temples or upon tablets, where they were made the object of study by numbers of the profession. The following is mentioned by Park: "Julien vomited blood and appeared lost beyond recovery. The oracle ordered him to take the pine seeds from the altar, which they had three days mingled with honey; he did so and was cured. Having solemnly thanked the god, he went away." It is stated that purgatives, emetics, venesection, friction, sea-baths, and mineral waters were all used by the priests. All of which sound familiar to us today. Prayer was made, and deceit was freely practiced to influence the patient's mind; grotesque juggleries and extortion were common.

Pythagoras was the founder of a school of philosophy. The Pythagorean physicians were the first to visit the homes of the sick, and were therefore called ambulant or periodic physicians. The Pythagorean Empedocles, a native of Agrigentum, first noted that a periodic pestilence which visited the city always followed the sirocco. He caused a wall to be built to direct the wind and thus free the city of the fever. Likewise he quickened the current of a stagnant stream in Selinus to which he attributed the origin of noxious vapors, and thus freed that city of a pestilence.

In the Greek gymnasia physical culture, compulsory in those days, was taught as a means of preserving health. The physical directors who were physicians, treated the sick with drug remedies, dressed wounds, applied ointments, massaged, and reduced dislocations. Here may have been the origin of massage and a further development of surgery, but certainly not the origin of Osteopathy, since massage nor any of its methods is Osteopathy in any particular.

At a period when mythology was waning and history was dawning, appeared Hippocrates, known to us as "The Father of Medicine," one of the brightest lights in the early history of medicine, who made observations and classifications of disease still in vogue. Hippocrates was of noble mind, free from the follies and superstitions of his day, with an exalted conception of the duties of the physician. He was of the faculty of famous school of Cos, and is stated to be the founder of the medical art as we now practice it. He possessed great skill in the use of instruments, which he imparted to his followers; he recognized disease as a condition regulated by natural laws, and with a tendency toward spontaneous recovery, which tendency alone could be successfully followed by medical treatment. To Hippocrates the present age is indebted for the method of close observation and accurate interpretation of symptoms.

But little was known at that time of Anatomy, Physiology and Pathology; hence more dependence was placed upon mere observation of symptoms, thus originating the empiric method all too much in vogue at the present time.

The Hippocratic school recognized four elements: earth, air, fire and water: and four conditions; heat, cold, dryness and moisture. Four humors of the body are described; blood, phlegm, yellow bile and black bile, (Humoral theory.) Right proportions and distribution of these meant health; wrong, disease, while the four elements must be in exact proportion in health.

Another queer theory was that of Fluxions, a sort of congestion, produced by either heat or cold; the tissues by action of heat or cold, became more porous and the humor also became attenuated.

Hippocrates recognized the "Vis medicatrix naturae," and taught that the physician was to aid the sick man to overcome the disease. He recognize crisis in disease, and originated the habit of prognosis. In treatment, medicines were secondary, and exercise and diet of prime importance. "But," says Encyc. Britt. "insensibly, the least valuable part of Hippocrates' work, the theory, was made permanent; the most valuable, the practical, neglected."

Hippocrates was a voluminous writer, among his important works are his Aphorisms, 70 vols., important until recent times; on Fractures; on Articulations and Dislocations, Wounds of the head; Diseases of the Eye; on Fistula, on Haemorrhoids; Diseases of Women; Accouchment, etc., etc.

LECTURE XII.

HISTORY OF MEDICINE.

The period in which Hippocrates lived is called the Philosophic period, 500-320 B. C. Following this came the Anatomic Period, 320 B. C. to 200 A. D., in which the most renowned names are those of Herophilus, Erasistratus, Pliny, Galen.

For one hundred years after Hippocrates but little advance is recorded in medical science, but under the reign of Ptolmey Soter, and his son, Ptolmey

Philadelphus, great progress was made owing to their patronage and to their allowing of human dissections before interdicted. The Alexandrian Library, founded about this time, was another mighty aid to progress, felt no less in Medicine than in other branches of learning. Herophilus and Erasistratus both enjoyed the privileges of the library and patronage of the Ptolmeys.

The former, for whom the Torcular Herophili is named, is said to be the first to take up systematic dissection of the human body. He was an admirer and follower of Hippocrates, having studied in the school at Coz. Among his writings are some upon the eye, pulse, midwifery, etc., and commentaries upon the works of Hippocrates concerning the membranes, vessels and ventricles of the brain, the tunics of the eye, the intestinal canal and parts of the circulatory system. He mentioned the thoracic duct. Thus it will be seen that under him the knowledge of anatomy was much advanced.

Erasistratus was also a diligent anatomist but not a follower of Hippocrates. He discovered the lymphatic vessels; declared the function of the epiglottis to be to keep the liquids from entering the lungs; described the valves of the heart more fully than had been done; wrote upon fevers, paralysis, hygiene, etc. He held that most diseases arose from decomposition of food in the stomach after overeating. He therefore bled and recommended fasting for this trouble which he called plethora. He depended on diet, baths, and exercise much more than upon drugs, in his therapeutics. He elaborated a mechanical theory of digestion (trituration) and of disease.

These two names are important in connection with the Alexandrian School of Medicine. Each was the founder of a school. The Herophilists made great progress in Anatomy, but at last neglected it. The Erasistrateans gave much attention to special symptoms of disease and to drug remedies. They opened the way for the Empiric School, which disregarded anatomy entirely, thinking it useless to seek for the cause of disease. They thus came to pay almost exclusive attention to the observation of the phenomena of disease, and thus set up pernicious habits of empiricism, treating of symptoms, which endure today.

The Alexandrian schools as a whole did much to advance the knowledge of Anatomy, Surgery and Obstetrics.

Empiricism rejecting anatomy, and necessarily knowing but little of Physiology, became firmly entrenched in the minds of Physicians, because in the midst of confusion of theories and ideas, it rested upon a foundation of experience and observation which seemed to give it authority. It later fell into disrepute through the ignorance of its adherents, and Empiricism became a term of anathema, until rescued later by the labors of Bacon, Locke and Condillac, under the name of the Experimental Method.

Roman Medicine:—The early Romans, it is said, possessed no distinct School of Medicine, and when about 200 B. C. the profession first appeared among them, it seemed to have come from the Greeks. One of the greatest names in Medicine belonged to a man of those times, Galen, whose name is closely connected with the development of Physiology. Galen was of the

Dogmatic School founded by Hippocrates, he was very learned in all of the sciences of his time, and knowing all that was to be known of Anatomy, Physiology, and Medicine at that period, became a unifier of the various sects and theories, thus doing much to elevate the profession. He studied at Alexandria, but, while a follower of Hippocrates, yet assumed an independent place as his successor. He recognized in man three principles, spirits, humors, and solids; of temperaments, resulting from the varying proportions of these three principles, he thought eight different kinds existed between the limits of health on one hand, and disease on the other. The human soul had three parts; the vegetative, found in the liver; the irascible, in the heart; the rational in the brain. He noted the difference between continued and intermittent fevers, and, together with Hippocrates, held that diseases were cured by contraries. He wrote upon the skeleton, and, as none existed at the time in Rome, recommended students to go to Alexandria, where they could see and handle the bones. He described most of the bones of the body. The term "symphysis" is attributed to him. He classified the muscles as flexors and extensors and showed that they were necessary to voluntary motion; located arteries and nerves between them. He was the first vivisector, since he exposed the muscles of living animals in his studies. Praxagoras had believed the arteries to contain air, whence their name, but Galen showed that they contained blood, and came very near being the discoverer of the circulation. Had he been a more independent observer, this prize would have been his. Park says here: "A little less reverence for authority, and a little more capacity for observation, would have placed him in possession of the knowledge, lack of which for so many centuries retarded the whole profession." He did not understand the venous system, thinking all veins originated in the liver. Whereas Aristotle had taught that the nerves originated in the heart, Galen showed that they originated in the brain and spinal cord, and he divided them into sensory, which he described as originating in the brain, and motor, originating in the spinal cord. He knew of glands, but supposed their secretions were excrementitious, and that they were emptied into veins. He divided the body into cranial, abdominal and aortic cavities. He supposed that air entered the cranial cavity through the cribiform plate of the ethmoid, passing out again by the same route, carrying excretions from the brain to be discharged through the nostrils, but part of the air became mingled, in the ventricles of the brain, with the vital spirits of the body to form the animal spirits.

It will thus be seen, that while Galen's mistakes were numerous, he did much for the advancement of Anatomy and Physiology.

He strove to place the diagnosis of diseased conditions and their treatment, upon a physiological basis, the only true basis for practice, but his ideal has scarcely yet been realized in any school of medicine.

In the period of Roman Medicine appears the name of Asclepiades, from whose theory of atoms, comes the atomic theory of the constitution of matter, held at the present time. He held that the body was composed of minute ele-

ments, eternal in existence, in constant motion, this motion resulting in the various phenomena of the body. The atom was imperceptible except to thought and was indivisible. It will thus be seen that his ideas in regard to the atomic constitution of matter are remarkably similar to those held by science today.

His therapeutics were based upon the idea of varying the sizes of the pores of the tissues, enlarging them to give exit to disease, or contracting them to keep it out. His favorite remedy was therefore exercise.

A pupil of Asclepiades, Themison by name, was the celebrated founder of the school of methodists belonging to these early days. They held it to be vain to attempt to understand either the cause of disease, or the organ affected by it. Three conditions were found in all diseases: (1) Relaxation of the minute passages of the tissues, (2) Contraction of these passages, (3) a mixture of the first two, partial relaxation and partial contraction. Such a simple scheme of disease required but a simple system of therapeutics, namely to relax or to contract. There were no specific diseases, and they therefore dispensed with the specific remedies. A great man of that school, Soranus, is credited with having used the speculum at that early date.

A Pneumatic school was formed in the first century A. D., whose doctrine was that the Pneuma, or universal soul, presided over pathological as well as normal activities of the body. It was seemingly an attempt to reconcile the theories of the Humoral (Hippocratic) school with those of the Solidist (Methodic) school. Its founder was Athanaeus.

At this period, also, another school of medicine was founded, the name of which is familiar today. The Eclectics were those of the school which strove to cull from each existing school the strong points and to combine them to form a new doctrine in medicine.

Though the period of Medicine (400 A. D.) just described, was Roman Medicine, the Greeks performed most of the practice. In this period the science as a whole retrograded. Galen was not allowed to dissect human bodies, so he dissected animals, especially the hog.

Arabian Medicine:—Under the patronage of Haroun al Raschid at Bagdad, progress for the science was made. He had medical books collected from all countries and translated into Arabic, he built schools and hospitals, and invited distinguished men to reside at his court. Supremacy in Medicine soon passed from Greek and Roman to Saracen, and from the 10th to the 13th century is known as the most brilliant periods in Arabian Medicine. Yet but little progress in the science was made during the period, and the chief service rendered the cause of Medicine was to collect and keep alive the body of learning already existing. A number of names are important in this period, but only a few can be noted in these lectures. Rhazes was the most noted of early Arabian physicians. He first accurately described smallpox and measles, and wrote voluminous medical works. Avicenna was the author of a great work in five volumes, which added nothing to existing knowledge.

During these times the practice of Medicine was largely carried on by the

clergy since it was in the monasteries that the books were kept and the knowledge preserved by study. From the 10th to the 13th centuries, the Jews were important practitioners of Medicine, although under the ban of the law, and were often called to attend prominent personages.

Crude medical laws to restrict the practice, were enacted even at this early date. Theodoric, a Visigoth king decreed that a physician could bleed a woman of noble birth only with the aid of a relative or of a domestic; that if a patient died from a surgical operation, the unfortunate doctor was given over to the friends of the dead man to be done with as they wished. Other laws were in keeping with these.

A great school in the middle ages was the school of Salurum in the Western Roman Empire, at Salerno, Naples, founded by Benedictine Monks. This school became a resort for sick and wounded crusaders, whose cases were subjects of study. Hippocrates and Galen were studied there, and important works were produced, among which may be mentioned, "Antidotarium," a standard pharmacopœia, whose system of weights and measures much resembled ours of the present day, and the writings of Urso upon the pulse and the urine.

In this school women first became prominent in Medicine. Tortula is supposed to have written "De Mulierum Passionibus." Other women were known at this time both as authors and as practitioners; they were much in demand because of their skill, and also became professors in the schools.

The influence of this school was seen in the action of Emperor Frederick II, who united the various Medical schools of Salerno into a Medical University, and enacted laws regulating the granting of licences to practice and the amounts of fees, etc. A physician must attend his patient twice each day and must go at night if called. Upon graduation of a student, he swore to observe the laws and to treat the poor gratis. "A book was then placed in his hands, a ring upon his finger, a laurel crown upon his head and he was dismissed with a kiss."

Charms and relics were used in the school in treatment. Its practitioners understood such symptoms as nausea, vomiting, bleeding at the ears in injuries to the head, etc. They avoided patients suffering with trouble of the heart, lungs, liver, stomach, etc., as they feared losing them. They acquired considerable skill in surgery, performed lithotomy, and employed splints in compound fractures.

Many of the Medical writings at this time were poems. Anatomy was but little regarded; but much depended upon practical experience and the observation of clinic patients, thus the point is made that the Salernitan school bridges the gap between ancient and modern medicine.

LECTURE XIII.

Scholastic Period:—Arabian Medicine began to gain an influence through translations of Arabian writings into Latin, and the Arabian teachings of Greek Medicine began to predominate throughout the profession.

A new school was founded, now, at Montpellier [Spain] in which the Spanish Jews were most active. This school grew as the Salerno school, mentioned in the last lecture, declined, and Arabian Medicine remained strong in influence until the Renaissance [16th Century.] The authoritative sources of medical writings at this time were found in Arabian texts, and thus the medical writers at this period were called Arabists. But the writings at this time are said to have been mostly commentaries upon Galen, Hippocrates and others, showing how they still influenced Medical thought and Medical literature.

It is interesting to note that this period produced the first English Medical authors, Gilbert about 1290 wrote a "Compendium Medicinal," and Bernard Gordon, Scotchman and professor in Montpellier, wrote a *Practica* or *Lilium Medicine*. John Gaddesen, physician to the king of England wrote *Rosa Angilica*. All of these works are spoken of as visionary, speculative and superstitious. Gilbert wrote of Leprosy, and Gaddesen may be particularly interesting to Osteopaths from the reason that he first employed "laying on of hands" in the treatment of scrofula.

Surgery, at this early date, was, as always, more progressive than Medicine. Among the prominent names of this profession are those of Guy de Chauliac [1350] and John Arderne, an Englishman. Mondino [1275] was another great Anatomist; his works along with those of Galen, were read for 200 years. Whereas dissections had before been done upon lower animals almost entirely, he braved public opinion and the law in making public dissections of the bodies of two women at Bologna. For a long time afterward no one dared emulate him in this matter. The objections of the clergy and the bulls of the Pope rendered human dissection impossible for many years. Guy de Chauliac was a most eminent and learned surgeon and author. He operated for dropsy, stone in the bladder, cataract, hernia, etc., was attacked by the plague and wrote a description of his symptoms and the course of the disease that became classic.

A curious custom of these times was the writing of scientific and medical works in poetry, and strange titles were used, e. g. "Flowers and Lilies of Medicine," the name of works dealing with the plague and venereal diseases.

The healing art, previously almost entirely in the hands of the clergy, now began to be taken up by others, as shown by the oft repeated term 'lay-surgeon.' Priests thought surgical operations beneath them and often left them to traveling surgeon, while the barbers espoused the profession and were known as "barber-surgeons,"

During the Arabian Period of Medicine the Arabian people had emerged

from the darkness of ignorance and had become a polished people, only, however to be over run by the Turks from the deserts of Tartary, a people of whom it has become proverbial that grass never grew where the foot of the Turk had trod.

The Renaissance (16th Century) affected Medicine as it did every other branch of learning, viz: It swept away much of the darkness of ignorance and superstition which had obscured truth and hindered progress, and led to renewed study and investigation, resulting in enlightenment and advancement.

The work done at that time was the origin of the present continuing scientific movement. The renewed study of the works of Galen stimulated progress in Anatomy, while the discovery of the circulation of the blood, by Harvey, gave new life to the much neglected study of Physiology. The works of Hippocrates, Galen and Celsus, were studied and translated from the Greek, becoming thus the foundation of this new movement, their influence being still felt in Medicine today. A complete edition of the works of Hippocrates was translated into Latin. Mondinus, whom we have mentioned as dissecting the body of two women in Bologna, published a work upon Anatomy, illustrated with wood cuts.

The embargo placed by the Pope upon the dissection of human bodies, was removed, dissections thereupon became general, much to the benefit of science. Jacques Dubois or Sylvius, grouped and named the muscles and determined their functions; he is credited with the discovery of valves in the large veins, and first used colored injections in studying blood vessels. He seemed to be unduly influenced by the authority of Galen.

Vasalius (1514) was the great independent observer so much needed at this time. He dissected small animals and robbed cemeteries for human material. At the age of twenty-nine he became the author of the most complete anatomy yet written. He had the boldness to deny Galen's authority and to point out his mistakes.

Columbus (1490) dissected many bodies, and nearly discovered the blood circulation, having noted the systole and diastole of the heart and their connection with the dilatation and contraction of the arteries. He found that the pulmonary vein contained arterial blood and was acquainted with the pulmonary circulation.

Eustachius and Fallopius (early 16th Century) were both great Anatomists and made discovery of parts of the body bearing their names.

The Arabian school of Medicine had added but few observations to the crude Pathology of Galen.

Two men, Benivieni and Eustachius did much in this line. The former is said to have been "the first who had the habit, felt the need, and set the useful example, which he transmitted to his successors, of searching in the cadaver for cause of disease." He made observations upon gall stones, the lesions of heart disease, and the transmission of syphilis from the mother to the foetus.

At this time Felix Plater (1536), a Swiss, classified diseases "according to the totality of apparent symptoms." During the period, also, of which we have been speaking, surgery fell behind Medicine and became of small repute. Owing to the social customs it had come into the hands of ignorant "barbers, bathers and bone-setters," simply because these classes were proscribed from the trade of mechanic or artisan.

The clergy, who practiced, were prohibited by the church from shedding blood. Hence surgery fell into the hands of the low classes mentioned, and as they saw no need for the study of Anatomy, it sank very low. This condition was changed about 1515, when the school gained authority over the surgeons and compelled a higher standard. Ambrose Pare (1510) was a noted surgeon who first ligatured blood vessels in amputations, thereby avoiding the cautery.

Paracelsus (1493) was the founder of the school of Chemical Medicine. He dispensed with the authorities, though he admired Hippocrates. He cut loose from all authority, denied the utility of studying Anatomy, but since he regarded man as a microcosm which he compared with the macrocosm, nature, a knowledge of the nature of man was to be gotten by studying external nature. He laid stress upon the curative power of nature, and gave Chemical Medicines, especially Antimony. Thus arose the school of Chemical Medicine, and the use of Antimony as a Medicine was an important thing among its adherents. The value of his services to Medical Science is estimated to be small, or entirely nil. His school did not endure, though the practice of administering chemical medicines did.

The result of the Renaissance upon Medicine was primarily to renew interest in ancient Medicine. Through new study of Hippocrates and Galen, and by thus adhering to the old, taking Medical knowledge second hand, poorer results were obtained than would have resulted from an entirely independent study. Yet the outbreaks of epidemics of hitherto unknown diseases compelled investigation along new and independent lines. Another advance is noted in the introduction of the clinical method of instruction, one of the most practical and valuable now in vogue. This was first tried in Padua, Italy, where the surgeon, Montanus, gave clinic instruction in St. Frances hospital.

Leonard Botal, a French surgeon, was the first to employ bleeding to considerable extent. He bled weak old men from two to six times per annum, and thought it well to bleed a robust healthy person once in six months. He had considerable success.

During this period the profession of physicians was divorced from the priesthood; surgery became more closely affiliated with Medicine; schools increased in number, and hospitals and dispensaries were founded.

Some peculiar customs prevailed at this time. For example, the students chose the officers of the universities, sometimes the teachers, and took part in arranging the curriculum, a privilege which students of today would fain exercise. Religious exercises were held before and after dissection, even though the cadavers were usually those of criminals, a custom, by the way, from

which we of today have far departed. Demonstrations were given by surgeons but the dissecting, an unworthy job, was the work of barbers.

Medicine in the 17th Century:—Just before the opening of the 17th Century it is said the world was in a woeful state. Devasted by wars and plagues, the peoples, superstitious and rude, were in poor condition for mental progress. Yet progress was made, be it said to the credit of the virility of the human mind. The improvement began with the Renaissance, and continued until the 17th Century. The influence of Galen and Hippocrates in matters Medical still remained supreme, though the developing sciences of Mathematics and Physics led to a new independence of mind which lessened the quondam reverence for authority. This was a step in the right direction. Futhermore the formation of the cell-doctrine, the discovery of the circulation, the improvement of the microscope, together with other important discoveries furthered science and Medicine remarkably. In this century arose several different schools and several prominent individuals who claim attention.

Now the clinical method, begun in Italy, was introduced into Holland. It is to be noted that the clinical method of studying and making prominent the symptoms of disease, led to neglect of Galen and to exaltation of Hippocrates.

Malpigi and Grew discovered that both plant and animal tissues were composed of cells, and advanced the important cell-doctrine, which is at the bottom of the science of Anatomy, Physiology and Pathology today.

Van Helmont is one of the great names of the 17th Century. He was really a successor of Paracelsus, founding a grotesque theory which recognized the fall of man as the origin of disease, and regarded demons, witches and ghosts as a cause of disease. He used mild remedies, and introduced some new chemical methods into pharmacy.

The discovery of the circulation of the blood had important and immediate effects, since it led to a reconstruction of the doctrines of Medicine upon a Physiological basis, and led to the founding of the Tatro-Physical of Medical, and the Tatro-Chemical schools. Many observers before Harvey had discovered facts concerning the circulation. They knew that blood was contained in the veins, but finding the arteries empty after death, supposed them to be filled with spirit. The liver was supposed to be the origin of the veins, the blood leaving it and returning to it, always through veins, propelled by undulations. This view was probably held by Erasistratus. Galen found that the arteries contained blood, that the great veins emptied into the right cavities of the heart, but supposed that it passed to the left heart through perforations in the septum. Michael Servetus, Columbus and Cesalpinus were more or less fully cognizant of the lesser or pulmonary circulation; valves in the viens had been discovered as well as the swelling below ligature.

William Harvey was an Englishman, born in Kent, England in 1578.

This advance in truth shared the common fate and was subjected to the bitter opposition of the omnipresent bigot. The new discovery was supported by the philosopher Descartes. Harvey found no lack of new facts and argu-

ments to adduce in favor of his theory, and saw it come into general acceptance.

The capillary system, without which the theory of Harvey is incomplete, was discovered by Malpigi in the lung and mesentery of the frog. Leuwenhoeck, with his improved microscope, saw the current of blood in the small vessels in 1690. It is said that Marchetti first demonstrated the capillary connection of arteries and veins.

The theory had been held that the heart was an air chamber, that the air conveyed by the trachea, reached the heart by anastomoses of the bronchi with the pulmonary veins. Harvey's discovery disproved that theory. It was shown that the pulmonary veins did not convey air, but blood alone; studies were made of the respiratory motions of the chest; the difference between venous and arterial blood was demonstrated by Goodwin, who experimented the frog, and noted the change in blood when passed through the lungs. It is said that an observer, Hassenfratz, filled a silk bladder full of venous blood, and then placing it in an atmosphere of oxygen, noted the change. These experiments and observations opened the way for studies and demonstrations of respiration, how accomplished and for what purpose.

LECTURE XIV.

In addition to Harvey's discovery of the circulation of the blood, the discovery of the lymphatic system and its physiological action was of prime importance. Herophilus and Erasistratus had noted the lymph vessels, but had confounded them with arteries. Eustachius in 1563 discovered the thoracic duct in the horse. In 1622 Aselli, an Anatomist, accidentally discovered the lacteals in a dog killed during digestion by picking a vessel and seeing the white fluid issue therefrom. Finally, Pecquet, a student at Montpellier, discovered the receptaculum chyli (1647) and traced the thoracic duct to its termination in left subclavian vein. These discoveries led to widespread interest in the subject, and to a working out of the blood making system by the various Anatomists of the time.

The seat of vision had been located in the crystalline lens, but Kepler demonstrated its true function, and he and Scheiner found that the optic nerve, terminating in the retina, was the true organ of sight.

The general science of Physiology was much furthered by the discovery by Glisson of the irritability of tissue, a theory worked out later by Goerter and Haller.

Two 17th Century schools of Medicine receive special mention.

The Tatro-Physical school was an outgrowth of the study of Physiology. A Neapolitan, Borelli, was its reputed founder, and the principle of the school was to regard the functions of the body as resting upon a purely mechanical or physical basis. Bones were levers; digestion was trituration; nutrition and secretion depend upon mechanical tension of the vessel walls, while the heat o

the body was due to the friction of the blood-corpuscles against the vessel walls.

Santoro, a chief man of this school, constructed a thermometer, and also measured the insensible transpiration of the body with considerable accuracy.

The Tatro-Chemical School, founded by a Frenchman, Le Boe, was more nearly related to the practice of Medicine. But little application of the theories of the Tatro-Physical, or Physiological school, had been made to the treating of disease, and it is regarded as unfortunate that the tendency thus originated was of so little real value. Physiological practice has ever been the desirable thing in Medicine, but is almost as noticeably absent from the practice of the schools of Medicine of today, as it was from these of the 17th Century.

The Tatro-Chemical school attempted to reform Medicine upon a basis of the use of chemical Medines and the newly discovered theory of circulation of the blood. Fermentation, taking place in the stomach, was an important physiological process. Too great acidity or alkalinity, would disturb the process and result in corresponding disturbances. Willis, the great English Anatomist, was an adherent to this doctrine. He gave the earliest account of diabetes, and wrote upon nervous diseases.

Sydenham is an important name in Medicine in the 17th Century. He seemed to have been unprejudiced by any of the prevailing theories, and simply studied the disease as he found it, he was thus a follower of Hippocrates an empiric practitioner, though not to a fatal degree. He recognized the healing power of nature, and held that disease was simply the result of nature's attempt to throw off the unnatural condition. He attributed much importance to the history of disease and to the influence of the weather. Sydenham was really a great medical reformer, and exerted much influence in leading men back from theories to actual conditions.

The 17th Century medicine, true to the spirit of the Renaissance, had been progressive. It had, however, simply opened the way for greater change and advances which were to follow in the 18th and 19th Centuries. The tendency of the 18th Century seems to have been toward the perfecting of the theoretical systems.

To this period belongs the names of Boerhaave, a famous professor of Medicine at Leyden. He lectured at Leyden, and made the hospital there the center of medical influence in Europe. He followed the modern method of clinical instruction, and adhered to the views of Hippocrates and Sydenham. Hoffman attempted in his system, a synthesis of the views of "spiritual" and "material" schools. Stahl attempted to combat materialistic views of disease. His theory known as "Animism" made the soul the chief factor in the process of life.

Haller and Morgagni represent a reaction from the theoretical speculations of the teachers just mentioned and the latter with Sydenham founded methods upon which modern medicine rests. The former did work in Physiology of much influence in medicine. By defining irritability as a property of muscular tissue, and distinguishing between it and the sensibility of the nerves, he did

much to discourage speculations concerning the influence of the "Anima" upon the body in health and disease. It is said that Physiology, in the modern sense, dates from Haller, while from Morgagni dates modern pathological anatomy. His ante and post mortem examinations were the basis of an important work, which is said to have created a new epoch in science. The study of morbid Anatomy became, through him an important adjunct to medical science.

The influence of the Brunonian system of John Brown, though short lived, seemed to have been considerable at the time. He believed that the processes of life, disease and cure of disease rested upon excitability. External forces and functions of the system were exciting powers which called forth the manifestations of life. He classes diseases as sthenic and asthenic, and treated them respectively with agents of depletion and of stimulation.

At this time arose Homeopathy, the system of Hahnemann. His motto was "*Similia Similibus curantur.*" [Galen's.] Hahnemann declared disease to be the totality of symptoms, and therefore regarded as useless investigation of the cause of disease. He rejected the teachings of pathology and morbid anatomy, as well as the *Vis medicatrix naturae.*" He says "For as far the greatest number of diseases are of dynamic [spiritual] origin and dynamic nature, their cause is therefore not perceptible to the senses." He held that nature was a bad healer, and drugs were the agents of God to cure diseases. Medicines administered to healthy persons caused symptoms of diseases they could cure. Hence the doctrine "*Similia Similibus Curatur,*" a motto which however, is not original with Hahnemann, since Hippocrates, Paracelsus, and others used the phrase before him. A distinctive feature of this system, one seemingly original with Hahnemann, was the attenuation of medicines, styled "dynamizing" or "potentizing" of the medicine. He held that dilution developed the spiritual power that lay hidden in the Medicine. He held that all diseases of a chronic character are caused by either itch, syphilis or sycosis [skin disease.]

Homeopaths, after a hard fight, have come to be generally recognized in this country, having been recently, during the Hispano-American war, recognized by the U. S. government in the army service. Homeopathy, it is said, must be credited with drawing attention strongly to therapeutics, while it seems to a "man up a tree" that in general its success in the treatment of disease is as great as that of its enemy Allopathy. Possibly the case recovering with its remedies "would have gotten well anyhow," as physicians say of cases cured by Osteopathy, and there still lurks the suspicion that the curative power of drugs attenuated beyond the reach of chemical analysis must be about equal to the healing virtues of the colored water and chalk powders of the Allopath, and that, after all, the real explanation of the recovery would be found in the recuperative power of nature, untampered with, and in the aid afforded by good nursing. Witness the statement made by Magendie, former head physician in Hotel Dieu, Paris, who says that he divided the 3000 or 4000 patients passing

every year through his hands into three classes, giving to one the usual remedies, and to the other bread pills and colored water, occasionally creating a third class to whom he gave nothing whatever. The greater mortality was among those of the first class, many of the second class recovered but more of the third were restored to health. Men like Sir Ashley Cooper and Oliver Wendell Holmes, shake ones faith in medicines by declaring against them.

Keith, an English Physician, in his "Plea for a Simpler Life" discards medicines almost entirely, and talks of success in cases of scarlet fever, apoplexy, haematuria; haemorrhage of the stomach, etc., without their use. We all know that similar statements made by the most eminent authorities, might be multiplied to a great number, that doctors give less medicine as they grow older; that prescriptions contain fewer drugs now than formerly, while the "drug habit" stands in ill repute.

To return to the history of medicine. The 18th century produced in Italy, Antonia Maria Valsalva, eminent as an observer, practitioner, and Lancisi, anatomist, and author of a work upon diseases of the heart and aneurism. In France of this period, Senac was the author of a book upon heart disease, and Sauvages wrote *Nosologica Methodica*, a natural history classification of disease.

Among English physicians, Fothergill studied Diphtheria and Tic Douloureux; Jenner introduced vaccination as a preventative measure against small-pox. In Germany, in this century, a Vienna physician, Leopold Arenbrugger invented the system of percussion of the chest in diseases of that region. He practiced immediate, not mediate percussion, using the tips of the fingers. His book written upon the subject, was called *Seventeen Novum*. His discovery, like many good things before and since, was first ridiculed and later adopted by the medical profession. It is said that this discovery, simple as it was, did more for the real advancement of medicine than the building of the many systems of medicine witnessed by the century.

In the early part of the 19th century arose the modern school of medicine. It is characterized by methods of research, giving less weight to theorizing and abstract speculation than previously. The growth of modern medicine was most marked in France and England, later in Germany.

In France, what is known as the positive school of medicine, grew up. Bichat, an Anatomist and Physiologist, wrote an important work, *General Anatomy*.

Broussais, a prominent follower of Bichat, sought to explain all diseases upon an Anatomical basis, e. g. assigning all fevers to intestinal irritation or inflammation. He called his method *Physiological medicine*, and emphasized the study of pathological school of Corvisart, Laennec and Boyle.

Laennec originated the method of auscultation in physical diagnosis, the basis of which was auscultation and percussion. It is said that the method of Laennec revolutionized the study and knowledge of disease of the chest, and was the more valuable in that it was coupled with very careful study of the pathology of the organs examined.

Boyle worked upon tubercles, and studied changes in the lungs and other parts of the body in tuberculosis. Louis introduced the numerical and statistical method of keeping a close record of cases, thus avoiding the error of judging merits of treatment by isolated cases. Osteopathy makes a serious mistake in neglecting statistics and records of its cases, laying itself liable to the charge of lack of scientific method and taking to itself credit for cases accountable for by coincidence, the law of chance, etc.

In England during this period the important names embrace those of Erasmus Darwin, grand father of Charles Darwin, the great scientist, and of the Hunters, William and his brother John. The former was a great anatomist and pathologist. Richard Bright described the disease of the kidneys named for him.

Bell and Hall did important work upon the spinal cord and its disease. John Abercrombie published a work upon disease of the brain and spinal cord.

In the German school, at this time, Karl Rokitansky did much to place morbid anatomy upon a permanent foundation.

One marked feature of medicine of the present day is that, in spite of the progress made, there is a wide spread and increasing dissatisfaction with its results, both in the profession and outside, and a constant tendency to turn to new methods.

LECTURE XV.

Massage, Swedish Movement and Manual Treatment:—These are all forms of mechanical therapeutics. All are, at least in part, manual systems, the treatment being administered with the hands. In each system not only manipulative procedure is employed, but also gymnastics are used, i. e. passive, resisted, or free movements on the part of the patient. Massage seems to consist largely of manipulations made by the operator on the patient's body, while Swedish movement, though including these manipulations, make prominent the active gymnastics of the patient and is called also Medical Gymnastics.

The system of manual treatment ascribed to Ling, a Swede, seems to be a more thorough form of massage in which the manipulations predominate, but including also certain active movements on the part of the patient.

In general, these systems are but little understood, and are far more thorough as methods of healing than is generally supposed. In the hands of skillful operators, usually doctors of medicine, remarkable results have been accomplished in the cure of disease. These systems are generally employed by masseurs without technical education, and thus have come to be generally misunderstood; being as a rule unskillfully applied, and by unscientific operators, the results have not been such as the systems are capable of producing. However, none of these forms of treatment are Osteopathy; all differ from it radically, yet since they are systems of manipulative therapeutics, and since, unavoidably in any such general mode of treatment, there are certain resemblances in method, in manner or in results, Osteopathy has been frequently confounded with these other methods.

Massage is the general term used by the average man to designate all forms of manual treatment, hence Osteopathy has become to him massage.

In Eccles' "Practice of Massage" five different forms of manipulation are described, as follows:

1. Effleurage, or stroking; for effects upon the skin; given in a centripetal direction to aid the flow of lymph and blood toward the heart.
2. Petrissage, or kneading; deeper than stroking; for effect upon skin and muscle in direction of blood flow to the heart, and for the purpose of squeezing out the waste from the tissues. It stimulates lymph and blood flow.
3. Tapotement, or tapping, clapping or hacking. This is given with the dorsal surface of the second and third phalanges, with the ulnar or radial border of the hand, for the purpose of affecting deeper structures, i. e., for stimulation.
4. Vibration, a quick vibratory motion, variously administered, given over chest, abdomen, nerve trunks, etc., for stimulation of the deeper viscera or nerves.
5. Massage, a friction, a sort of circular friction, generally employed about joints to soften tissues and muscles; said to be very useful in sprains, strains and rheumatism.

These five forms of motion, sometimes more, are described by the different authors. There is much variation in the technique. Usually a masseur, after a course of study, will throw aside his books and adopt a system of motions of his own. Yet, unlike in Osteopathy, the manual of technique, or the exact mode of administering the various movements, is made very important by the authors. One example will illustrate the detail with which these motions are described, and the careful attention that is bestowed upon the manner of giving the treatment:

"The rubber, remaining upon the left side of the couch, uncovers the left lower limb, and with the right hand delivers a series of rapid frictions from the toes upward over the dorsum of the foot, external surface of the leg, the knee, and front and external surface of the thigh; then with the left hand, the knee being semi-flexed and the thigh slightly abducted and rotated outward, the sole of the foot, calf, inner side of the knee and thigh, are also lightly and briskly rubbed; then, recovering the limb, and exposing the foot and ankle only, the more detailed treatment of the foot is given. Supporting the sole of the foot in the palm of the left hand, the heel resting in the semi-flexed fingers, friction over the dorsum of the foot and the front and outer surface of the ankle is performed in much the same manner as that of the back of the hand,"

The masseur thus goes over the body in detail in general treatments. There is special massage for the limbs, the heart, the lungs, the eyes, the face, the ear, the head, the bladder, intestines, etc.

The time required for treatment varies from a few moments to three quarters of an hour or an hour and a quarter.

In addition to the movements described, massage includes voluntary motions by the patient, sometimes aided, sometimes free, sometimes resisted by the operator. These come after the passive massaging, and are for the effects of exercise or to develop any special part.

Swedish Movement is, according to Dr. J. H. Kellogg, a "system of medical gymnastics," a "physiological mode of treatment of disease." As indicated by this definition, the system consists largely of active gymnastic exercise upon the part of the patient. Massage, Dr. Kellogg terms a special feature of the Swedish movement. He states the principle of Swedish movements, "that muscular movements are a powerful means of affecting physiological processes and that when gymnastics are used therapeutically, they must be employed with the same accuracy and precision with which the physician regulates the doses of medicinal agents." Thus we see that the idea of gymnastics is made prominent. Incidentally, the movement already described as massage, and other passive movements are used. Such are hacking, clapping, beating, stroking, kneading, fulling, sawing, etc. A great variety of movements are indicated and fully described, certain physiological effects being expected from a given definite movement. Compound words are used, and the terms read something as follows: "(1) Sitting, chest-lifting; (2) half-lying, foot-rolling; (3) high-ride sitting, trunk-rolling; (4) fan-sitting, arm-rolling," etc.

The above is taken from a receipt of movements given for congestion of the brain.

Peter Henrik Ling, the Swede, is credited with being the originator of a system of Swedish movements. A work called Ling's "System of Manual Treatment" gives more prominence to the manipulations of the operator, but describes also active movements to be made by the patient.

The idea prevalent among us that massage does not require a knowledge of anatomy is a mistake.

These systems are founded upon a most thorough knowledge of Anatomy, Physiology and Physical Diagnosis. Yet it is probably true that massage and the like, as usually administered, are in the hands of persons who have but a superficial knowledge of these sciences.

These forms of treatment are given in both acute and chronic conditions with important results.

In Swedish movements, motions are indicated for laxative effect, for abdominal disease, haemorrhoids, frequent menstruation, etc. A long list of receipts of combinations of motions is given for such conditions e. g. as Anemia and Chloroses; Scrofula, Diabetes Mellitus, Hysterics, Tremors, Colic, Bright's Disease, Pott's Disease, Prolapsus Uteri, Leucorrhœa, etc.

The effects of manual treatment are interesting. Passive movements act upon venous and lymphatic circulation, and are made in the direction of these currents.

Stroking stimulates the pilo motor nerves, leads to a contraction of the arrectores-pili muscles which causes the sebaceous follicles to be pressed upon, thus aiding secretion.

By rubbing, rolling and squeezing of the skin, the superficial circulation is stimulated, the capillaries dilated, and the pulse-rate slowed.

Firm kneading of the muscle is followed by a slow pulse-beat, and in case a large muscular mass is kneaded, a fall of blood pressure in the body is noted. Eccles states that "it is possible that pain occurring in the deeper organs may be modified by manipulation over the superficial areas corresponding to the distribution of the cutaneous sensory nerves derived from the same segment of the spinal cord as that from which the sensory nerves of the disturbed viscus are derived." Thus effects may be gotten upon the heart and lungs by external work. He summarizes the effects of massage as follows:

1. "Mechanically and directly, elimination of waste products from the tissues under manipulation is increased, the absorption of exudations and infiltrations is greatly favored, adhesions are attenuated, sometimes broken down, and even organized thickenings may be reduced.

2. Nutrition of the part is improved, vascularization is increased, and metabolism is augmented.

3. Indirectly, massage acts as a derivative, relieving congestion of the internal organs by attracting the flow of blood to the surface, and muscular vibrations are set up, stimulating the nervous system, acting through it reflexly,

thus exciting secretion; while on the other hand, its sedative influence relieves pain and reduces over activity."

Kellgren claims for nerve vibrations:

1. "Raising of the nervous energy.
2. "Diminution of pain [is seen in facial neuralgia and migraine.]
3. "Contraction of the smaller blood-vessels [heaviness of the head is quickly relieved by stimulation of the sensory nerves of the scalp.]
4. "Stimulation of the muscles to contraction.
5. "Increased secretions of the glands.
6. "Diminished excretion from the skin.
7. "Decrease of temperature [as in fevers.]"

These are given as examples of results claimed for manual treatment. Much more might be added.

Osteopathy is not Massage or Swedish Movements. While there are similarities, there are radical differences:

1. These other forms depend largely upon the general gymnastic or manipulative effect upon the body. Osteopathy does not depend upon general effects from general treatments, but upon specific treatment.

2. They emphasize the *method of the motion* which, to the Osteopath, is secondary. A good masseur must be an expert manipulator in the particular sense of having a knack to give certain movements.

3. They are much more laborious and require a much longer time per treatment than does Osteopathy. Sometimes a single motion is sufficient Osteopathic treatment, or effects a cure.

4. Osteopathy requires no gymnastics of the patient as a part of the treatment.

5. They go over the parts of the body in detail, which Osteopathy does not do except in examination.

6. They make no search for any lesion or abnormality about the bodily mechanism, while Osteopathy finds in such lesions, e. g., a misplaced part, the most scientific cause of disease.

7. They do not go to nerve centers and nerve distributions in the way that Osteopathy does. They work upon them in a general way and only because they are readily reached. They do not seek for and remove lesions therefrom. On the other hand, Osteopathy goes to the definite nerve centers to influence the health of the body, and often removes obstructions from such centers, allowing normal action. The same is true of blood flow.

In these last two points is seen the most radical difference between the systems. Upon the whole, these manual systems compare with Osteopathy as does the shot-gun with the rifle. They produce excellent results by the "shot-gun method" of general manipulation, while Osteopathy works with the definite aim of finding the obstruction to health and removing it. It is unavoidable that, if such a comparatively "hit-and-miss" method as Massage can secure excellent results as a curative means, Osteopathy, with its definiteness, must

generally far exceed massage in results. It also follows that the former must generally work more quickly and easily than the latter in such cases as the latter could reach, and that it must succeed in a large class of cases beyond the power of these manual systems, since to this class belong so many disease conditions depending upon some removable obstruction not noticed by them.

LECTURE XVI.

Q. What would you do in case of meningitis?

A. Meningitis is a germ disease affecting the spinal cord itself. I have treated chronic cases. In the case of an infant of two and one half or three years of age the symptoms were a drawing back of the feet until the body assumed the form of a bow, a dribbling of saliva from the mouth, a lack of growth, the lower part of the body being undeveloped.

In an acute case the first thing to do would be to give a hot bath, evacuate the bowels; everything should be done to get the poison out of the system; when that was done I would give the patient upon rising in the morning, spinal treatment together with treatments upon the kidneys, liver, bowels and lungs. I am treating a case at present somewhat similar to this.

Q. What would be your method of treating the spleen when there was trouble there?

A. I would raise the ribs from the eighth to the twelfth on the left side, correcting any obstruction that might exist; giving the abdominal treatment to help remove the trouble. In malaria, where the spleen is congested, free the blood supply by working from the eighth to the twelfth dorsal vertebræ.

Q. How would you cause vomiting by Osteopathic treatment?

A. This is sometimes very hard to cause. Some people never vomit, no matter how sick they get, and others vomit at the slightest provocation. I have known of vomiting following manipulation of the solar plexus, and also upon deep pressure in the third left intercostal space.

Q. Give treatment for reducing fever. Is there any way to keep the fever from returning?

A. You might keep it down temporarily. I have seen cases of typhoid fever where the fever was kept down, but evidently the cause was not removed. Always see to removing the cause.

Q. Is there any effective treatment for barber's itch?

A. I do not know. I would open the pustules with a sterilized needle, sterilizing the pustules with carbolic acid.

Q. What is the treatment for colic?

A. Ordinary wind colic, the kind that babies have in the night, is caused by a disordered digestion. The treatment is to work the wind off the stomach, then stimulate the solar plexus, and work along the splanchnics.

Q. Is neuralgia successfully treated?

A. Yes, the treatment for neuralgia is by inhibition. Sometimes it is

caused by poisonous blood; sometimes by a pressure upon the nerves.

Q. In case of a paralysis of the lower limbs, where there has apparently been no circulation for three years, and after the patient had greatly improved, would the appearance of rash or boils have any bearing upon the case? Is this old waste matter, which has been dead for so long, carried off in this way?

A. I take it that the appearance of rash would be a good symptom, showing that the blood supply had been renewed. I have a case of liver trouble where the body was covered with rash; the rash disappeared and I take it as a sign that the patient is improving.

Q. How would you treat convulsions in a young child?

A. Convulsions are sometimes caused by intestinal worms; by congestion at the base of the brain; sometimes by a congestion of blood vessels or some displacements.

Q. Where and how treat for eczema?

A. I have seen cases of other troubles complicated with eczema and the result of treatment has been good. Usually the patient does not stay by the treatment long enough to get the desired results, as it is a slow process. The point is to build up the blood and purify it by treating all the avenues of excretion, and in that way remove the poison from the blood.

Q. Shell fish being eaten, hives appear on the skin, (as a result of the food), and too long a time having elapsed to expel the food by vomiting, how could you treat this case to overcome the conditions where you could not expel the food at once?

A. If it was so that I could not cause vomiting, I would stimulate the bowels by the method already indicated.

Q. Please explain how glasses seem to give temporary relief when taken off for possibly five minutes.

A. I would conclude that the patient was growing away from the glasses. I would consult an oculist.

Q. Would you suggest any other treatment for measles other than keeping the bowels open?

A. Stimulate the lungs, because the poison seems to take root in them.

Q. How do you slow the heart's action?

A. By inhibition in the superior cervical region, and by raising the upper left ribs.

Q. Please explain in detail the treatment for sea sickness.

A. Inhibition of the pneumogastric by thrusting the thumb into the third intercostal space on the left side. This treatment is also applied in the third and fourth intercostal spaces upon the right side, and in the fourth intercostal space upon the left side; to this I would add inhibition of the solar plexus by putting a pressure upon it, and stimulation of the pneumogastric nerves.

Q. What is the treatment for locomotor ataxia?

A. A thorough spinal treatment. This is a disease of the spinal cord. Stimulate the flow of blood to the cord from one end of the spine to the other.

Give attention to the local symptoms according to their nature, e. g., for diarrhœa, constipation, loss of control of bladder or bowels; give the usual indicated treatment, with stretching of the lower limbs.

Q. How do you treat insomnia?

A. Stimulate along the spine to increase the circulation; treatment in the neck; thoroughly relax the muscles of the neck, reducing any dislocations or slip between the vertebræ, and finally, inhibition of the superior cervical ganglia.

Q. How would you treat a child troubled with worms?

A. Through stimulation of the liver, causing an increased secretion of bile sufficient to expel such parasites. The stomach and intestines should be stimulated as well, and the child should avoid eating sweets.

Q. What do you inhibit in the neck for cutaneous circulation?

A. The inhibition of the superior cervical ganglion gets its effect upon the circulation in two ways: 1st—through connection with the sympathetic directly, and second through its connection with the medulla by the way of the sympathetic; the treatment, therefore, in this region influences the general circulation to the body in that it affects the vaso-motor center in the medulla.

Q. In what respect would a general treatment be compared in its general effects to a specialized or local treatment of a lesion?

A. A very general question. A general treatment would be to affect the general circulation and the general condition of the nerves; a local treatment correctly speaking ought to affect the circulation of the affected part under treatment. This only in the most general terms.

Q. Would not the tendency be to secure better results for a specialized treatment of the lesion in that a supply of blood would be drawn to that particular point alone and thus be better than the diffused state in the general treatment?

A. In general, I would say the more specific your treatment is, the more directed to the locus of the spine lesion, the better. The tendency of giving a general treatment is far too great already. General treatments should be judiciously employed as an adjunct to special treatment rather than as a hit and miss plan to affect the lesions.

Q. How do you treat for cold feet!

A. Stretch the limbs by flexing the knee against the thorax, and by rotation inward and outward, thus relaxing the muscles and correcting the blood supply.

Q. How can the bowels be moved quickly?

A. I should try a strong stimulation of the liver. In obstinate cases of constipation we frequently use the anema first.

Q. Where you have high fever caused by absorption of poisons in the blood, what should be the treatment?

A. Stimulate the kidneys and bowels and lungs, also cutaneous circulation; induce copious sweats, thus throwing off the poisons from the system; and work as already indicated to reduce the fever.

Q. What is the best plan to set lateral dislocation at the first and second dorsal.

A. I work as follows: Set the patient upon a stool with his back toward me, and use the head and neck as a sort of lever, so to speak, placing the thumb of one hand upon the side of the spine of the vertebræ on the side toward which it has deviated; the other hand being upon the back of the head. I now bend the head down away from the vertebræ in question, thus exaggerating the defect, pushing strongly down to the side, meantime pressing with the thumb upon the spine of the dislocated vertebræ in a direction toward that from which it has come. The head is next pushed around to the affected side, thus relaxing the ligaments, while the vertebræ is firmly forced back into place.

Q. Can parasites be removed by Osteopathic treatment?

A. The treatment has already been indicated, in part; I would add treatment of the liver, strongly stimulating the flow of bile; this the "Old Doctor" says is sufficient to remove intestinal parasites.

Q. How would you treat to relieve a very chilly feeling?

A. Through stimulation along the spine in the upper dorsal region to accelerate the action of the heart and lungs.

Q. How would you treat a case of toothache?

A. Send patient to the dentist. We have in a few cases had good results by inhibition of the fifth nerve, reaching it in ways already indicated in the course of these lectures.

Q. Is it dangerous to reduce bacterial fever?

A. The theory that it requires heat to destroy them would indicate as much. In general I would say it is our practice to reduce such fevers. While perhaps the high temperature of the body might tend to render the bacteria less productive of evil results, yet further treatment which we employ in such cases would seem to make it safe to reduce the fever as we always do. Of course, we never omit in such a case to strongly stimulate the action of the bowels, kidneys and lungs, to throw off both the bacteria or their products. Here this treatment, coupled with the general spinal treatment, tends to promote healthy metabolism, thus building up the tissues of the body, blood included, and to render it less liable to the growth of bacteria. In other words the theory of bacterial origin is that there is a so-called nidus, or "nest," in the tissue in which the bacteria may grow. It is held by eminent authorities that bacteria will not grow in unhealthy tissue, hence if the nidus exists in unhealthy tissue, the work of the Osteopath in building up the tissues does away with the nidus, the ever present tendency being toward the normal, aiding in such a way as to cause the tissue at this particular locality to become healthy. Thus the nidus is destroyed, and the poor bacterium is left without a home. In regard to the germ theory, and in its relation to Osteopathy, I might say that while the Osteopath accepts such theory in general, he, remembering the fact that unhealthy tissue only can form a nidus, esteems it conclusive that there must have been a cause for the previous presence of the bacteria there, or there would not have been any nidus. He simply sees that the bacteria may become secondary causes of disease. Here his treatment is devoted to removing the primary cause, preventing the bacteria from gaining a foothold in the body.

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(RED CLOTH BOUND.)

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